DOCTORAL THESIS

Role of Youth Bulge, Corruption and Government Size in Explaining Political Instability: A Cross-national Analysis.

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Role of Youth Bulge, Corruption and Government Size in Explaining Political Instability: A Cross-national Analysis.

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Abstract

This thesis examines the impact of youth bulge, corruption and government size on political instability moderated by socioeconomic and political factors. The impact is examined using two stages least square (2SLS) in a sample that comprises 139 countries from 1984 to 2013. Furthermore, this is examined using the following sub-samples: Organization for Economic Cooperation and Development (OECD) countries, democratic countries, oil countries and Middle East and North Africa region (MENA) countries.

Firstly, the role of youth bulge on political instability is examined (Chapter 2). The results show that youth bulge enhances political instability in countries with poor employment, slow economic growth and insufficient rents from natural resources. Interestingly, the results show that moving to democracy enhances the role of youth bulge as a factor that causes political instability. The impact of youth bulge is increased further if a country has a high level of educational attainment measured by gross tertiary enrolment. There are some variations in the relative level of importance of these factors across sub-samples.

Secondly, this study shows that the impact of the joint effect between youth bulge and other factors on political instability is stronger in countries experiencing high levels of corruption (Chapter 3). Corruption is demonstrated to enhance the effect of youth bulge, the adverse effect of unemployment and the impact of a high level of gross tertiary enrolment on political instability in some sub-samples.

Lastly, the potential for government to address factors influencing political instability is explored (Chapter 4). The results show that a government can lower the impact of some factors by enlarging its size or expanding its role to stabilize the prevailing political situation. Interestingly, the results find that enlargement of government size enhances the impact of unemployment on political instability in some sub-samples. The results also find that enlargement in size enhances the impact of corruption, urban growth rate and education on political instability in some sub-samples. Furthermore it is found that a reduction in government size produces a stronger impact of trade openness on political instability. Expanding the role of government escalates the impact of unemployment in all sub-samples except oil

countries and MENA region countries. The results also find that expanding its role enhances the impact of urban growth rate on political instability in the MENA region.

Key Words: Youth bulge, youth unemployment, gross tertiary enrolment, democracy, trade openness, corruption, government size, government role, political instability and panel data

Declaration

This thesis is submitted to Bond University in fulfillment of the requirements of the degree of Doctor of Philosophy. This thesis represents my own original work towards this research degree and contains no material which has been previously submitted for a degree or diploma at this University or any other institution, except where due acknowledgement is made".

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List of Abbreviation

The Middle East and North Africa Region	The MENA region
Two Stages Least Square	2SLS
Transparency International	TI
Organization of Economic and Cooperation Development	OECD
International Country Guide Risk	ICGR
Heidelberg Institute for International Conflict Research	HIIK
the Political Risk Service Group	PRS
U.S State Failure Task Force project	SFTF
Protocol for the Assessment of Nonviolent Direct Action	PANDA
Correlates of War Project	COW
Political Instability	PI
Youth Bulge	YB
Total Youth Unemployment	TYU
Rents from Natural Resources	Rents
Trade Openness	TO
GDP Annual Growth	GDP growth
Level of Democracy	RT
Gross Tertiary Enrolment	GTE
Logarithm of Total Population	Log T.pop
Urban Growth Rate	UGR
Corruption	Corr
Government Size	GS
Government Role	GR

Introduction

1.1 Background

Factors leading to political instability and the role of youth bulge are not a new field of study; however, it has recently attracted the renewed attention of researchers, policy makers and international organizations. This has occurred for several reasons. First, the role of youth bulge on political instability in several countries suggests that youth bulge can increase political risk regardless of the level of economic development or the level of democracy in a country. However, there is variation in factors influencing youth bulge and the prospective impact on a country's political environment. For example, 50,000 youth protested in London streets in 2010 to express their anger against the government plan to raise university tuition fees and decrease its grants to universities (Paul , Jeevan , Rachel, & Matthew 2010). Similarly, youth in Greece raised political instability in the form of demonstration, riot and strike aftermath economic crisis in 2008. The state of political instability in these two countries takes the form of small incidences that last for a short period of time and which do not have an international impact. On the other hand, youth bulge has escalated political instability to severe levels in some countries such as Syria and Yemen that have experienced ongoing violence since 2010. The ongoing state of political instability in these countries raises a significant security threat not only to neighboring countries but also on an international level.

Second, although youth bulge constitute a demographic curse in the form of political instability, they can be demographic dividends when appropriate economic policies are in place. Understanding the factors influencing the role of youth bulge on political instability enables the improvement of these underlying factors so that youth bulge can be turned from demographic curse into demographic dividends. For example, Bloom and Williamson (1998) argue that a high level of economic growth achieved by the Asian Tiger's economies can be attributed to many factors, among which is the high percentage of youth bulge and small percentage of dependent young and elderly. Furthermore, understanding these factors helps to prioritize their relative importance to youth bulge, which in turn affects political stability. These factors include lack of democracy, low level of educational attainment and employment opportunities. Prioritizing these requirements is important for the stabilization of a country's political environment. For example, installing democracy to reduce the political risk of youth

bulge may lead to political instability if youth bulge experience unemployment or have low levels of educational attainment.

This thesis is motivated by the unexplored role of youth bulge on political instability in several countries. It is also driven by the onset of the so-called the Arab spring in late 2010 in some countries in the MENA region. Understanding the factors influencing the role of youth bulge on political instability is important for policy makers to instigate change and turn youth bulge into demographic dividends.

1.2 Aims and Objectives

There is debate in the literature about the independent effect of youth bulge on political instability. Furthermore, there is no general agreement on the percentage of youth bulge that enhances political instability, although Huntington (1996) suggests that this occurs when the percentage of youth bulge within the age bracket of 15-24 years old to total population exceeds 20%. Similarly, different streams in the literature offer different explanations for factors influencing the role of youth bulge on political instability. Modernization theory states that the role of youth bulge on political instability is enhanced when youth bulge growth rate exceeds the growth rate in socioeconomic and political environments. Opportunity perspective states that a high level of educational attainment and high level of employment opportunities lowers the impact of youth bulge on political instability. Other streams in literature such as Rentier State Theory suggests that oil countries are at lower risk from youth bulge due to different forms of distribution expenditure. Thus, this thesis examines the influence of socioeconomic and political environment in the role of youth bulge on political instability, the influence of corruption and the influence of government size in the role of youth bulge on political instability.

Youth bulge sit alongside other standard determinants of political instability such as unemployment, economic growth, trade openness, rents from natural resources, gross tertiary enrolment, urban growth rate and log total population. Taking all these factors into consideration, in the second chapter this thesis will explain the impact of the joint effect between youth bulge and other socioeconomic and political factors on political instability. In the third chapter it will investigate the impact of youth bulge, youth unemployment and gross tertiary enrolment on political instability moderated by corruption. In the fourth chapter it will further examine the role of government size in lowering the impact of unemployment, corruption, education, urban growth rate and

trade openness on political instability. Furthermore, it examines the role of expenditure on education in lowering the impact of urban growth rate and unemployment on political instability.

In focusing on the role of youth bulge in enhancing political instability by considering economic, institutional and socioeconomic factors, this thesis takes a novel approach that expands the literature. The joint effect, rather than the independent effect, explains the channels that link youth bulge to political instability. The independent effect establishes general correlation between youth bulge and political instability, but does not explain the unmet needs and requirements that motivate youth bulge to commit violence. In terms of corruption, it examines its direct effect instead of the indirect effect analyzed in previous empirical research. The unique combination of youth bulge, youth unemployment and gross tertiary enrolment in the presence of corruption on political instability is also a novel contribution to the literature. Further, it analyses the joint effect of government role and size on political instability in order to establish the causal relationship between them, which is not examined by past empirical literature.

In addition, the thesis uses a different route of analysis compared to previous studies. It uses a broader measure of political instability that considers both minor and major forms of it, unlike past empirical research that measures it in the form of documented armed conflict which is an inappropriate measurement to capture the effect on political instability (because there is a decreasing trend in the number of armed conflicts world wide). This leads to the use of a dichotomous dependent variable to measure it (Niang, 2012). Dichotomous dependent variables are considered inappropriate for the analysis of large panel data containing many cross sections and cross time observations, especially when the number of observations of civil war are relatively small in comparison to the number of observations of peace (Goldstone, 2002). Instead, the thesis examines the effect of youth bulge, corruption and government size on political instability using panel data analysis, level of democracy, source of public revenue and MENA region. These sub-samples have characteristics that might influence the effect of these variables on political instability.

1.3 Chapter Outline

The thesis is organized as follows:

The second chapter investigates the role of youth bulge on political instability. It assumes that the role of youth bulge on political instability is exaggerated by socioeconomic and political environment. Several hypotheses are examined. The first hypothesis assumes that youth bulge enhances political instability. The second hypothesis assumes that higher economic growth lower the role of youth bulge on political instability. The third hypothesis assumes that the impact of youth bulge on political instability is stronger when they experience unemployment. The fourth hypothesis posits that a higher level of democracy lower the role of youth bulge on political instability. The fifth hypothesis tests the influence of education on the role of youth bulge, assuming that it enhances political instability when youth bulge achieve a high level of educational attainment. The sixth hypothesis assumes that higher oil rents lower the impact of youth bulge on political instability.

The third chapter investigates the impact of corruption on political instability. It gives a brief overview of the literature regarding the political and economic impacts of corruption. It examines four hypotheses. The first hypothesis assumes that corruption enhances political instability. The second hypothesis assumes that corruption enhances the impact of youth bulge on political instability. The third hypothesis assumes that a high level of corruption exaggerates the impact of unemployment on political instability. The fourth hypothesis assumes that the impact of level of educational attainment on political instability is stronger through its interaction with corruption.

The fourth chapter investigates the role of government in lowering the impact of several factors on political instability. It examines nine hypotheses. The first hypothesis assumes that large government size reduces political instability. The second hypothesis assumes that the political risk of unemployed youth is lower in a country with a large government size. The third hypothesis assumes that the impact of corruption on political instability is stronger when a country has a large government size. The fourth hypothesis assumes that the impact of a high level of gross enrolment on political instability is lower in countries with a large government size. The fifth hypothesis assumes that a government can enlarge its size to lower the impact of trade openness on political instability. The sixth hypothesis assumes that the impact of urban growth rate on political instability is lower in countries with a large government size. The seventh

hypothesis assumes that a government can increase expenditure on education to lower political instability. The eighth hypothesis assumes that a government can increases expenditure on education to lower the impact of unemployment on political instability. The ninth hypothesis assumes that a government can increases expenditure on education to lower the impact of urban growth rate on political instability.

The fifth chapter provides an executive summary of the empirical results of the hypotheses tested in each chapter, contribution to the empirical literature, future research areas and policy implications. These, of course, discussed in greater detail in the respective substantial chapters.

Chapter 2

The Role of Youth Bulge in Enhancing Political Instability

2.1 Introduction

Historically there have been several cases of political instability associated with a highly youthful population distribution (a youth bulge). The French Revolution in 1789 and the rise of Nazism in Germany in the 1930s are partly attributable to a youth bulge that experiences difficulty in finding employment (Urdal, 2004). Similar examples from recent history include the outbreaks of the Iranian Revolution in 1979 as pointed by Omid and Tara (2010) and the Algerian armed conflict in 1992[1] (Trends, 2001). Trends reveal that lack of employment, educational and housing opportunities for youth bulge triggered the Algerian armed conflict. Trends cite other similar examples in Turkey in the 1970s and 1980s. Moreover, it indicates that the Sinhalese national insurgency and Tamil rebellion conflict in Sri Lanka became severe when the country experienced a high percentage of youth bulge in the 1980s. Recently, the role of youth bulge on political instability has experienced renewed attention by researchers, policy makers and international organizations as a result of the onset of the so-called Arab Spring in late 2010 in some countries in the Middle East and North Africa (MENA) (Bricker and Foley, 2013).

Given the importance of the role of youth bulge on political instability, understanding factors that influence their role is important in order to lower their political risk. Commonly, the empirical literature tends to examine the role of youth bulge on political instability in the form of armed conflict and civil war (see, for example, Marcus, Islam and Moloney, 2008; Barakat and Urdal, 2009; Goldstone et al., 2010). The literature reaches inconclusive results about the relationship between youth bulge and political instability. This is largely because the research measures political instability in the form of large-scale incidences such as armed conflict and civil war. Such measurement has its limitations in capturing the role of youth bulge on political instability because nations have moved toward settling disputes using peaceful means. This leads to a decrease in the number of armed conflicts worldwide (Goldstone, 2002). Besides which, the determinants of armed conflict are different to the factors influencing the role of youth bulge on political instability. Armed conflict is driven by

[1] The armed conflict between the Algerian government and various Islamic groups that began in 1991 and ended in 2002.

religious or ethnic discrimination or other equivalent factors. Fearon and Laitin (2003) argue that such discrimination is the main factor behind civil wars in Eastern Europe, former Soviet countries and sub-Saharan Africa in the 1990s.

The presence of youth bulge in a country does not necessarily lead to civil war or armed conflict even when they experience low employment and educational opportunities. This is because such incidences require significant and permanent sources of financial resources. It requires interested parties to organize youth bulge in order to raise arms before a government. Also, initiation of any armed conflict needs to consider the strength of government military forces. In other words, there are several additional factors required necessary alongside the presence of youth bulge to initiate armed conflict. Interestingly, few empirical research measure political instability in the form of small-scale incidences. Urdal (2006) considers small-scale of political instability in the form of terrorism, riots and violent demonstration covering a period from 1984 to 1995 using the Protocol for the Assessment of Nonviolent Direct Action (PANDA). This data set has been criticized by Urdal(2006) for its biasness by reporting incidences of political instability in countries where the Western agenda has vested interests. Bricker and Foley (2013) measure political instability by constructing an index of political instability using the Heidelberg Institute data set that covers a period from 1996 to 2010. However, in both studies, the short time period might not be sufficient to capture the effect on political instability. Furthermore, Bricker and Foley (2013) and Urdal (2006) examine the role of youth bulge on political instability using panel data analysis (without differentiating between countries) based on the percentage of youth bulge or other criteria such as democracy.

The moderation effect of socioeconomic and political factors on the role of youth bulge on political instability has received less attention in the empirical literature. It could be that the role of youth bulge on political instability is moderated by other factors, which might partially explain the inconclusive relationship between the independent effect of youth bulge on political instability. Furthermore, the independent effect captures the broad needs and requirements of youth bulge; however, it does not identify the channels that link youth bulge to political instability, such as economic growth, unemployment, level of democracy, and education. Identification of such channels is important because it directs the effort of policy makers to the main causes of political instability caused by youth bulge. By doing so, public policy can successfully lower the political risk of youth bulge by targeting the right channel(s). For example,

the failure to identify such channels might result in the use of public resources to increase educational opportunities while the main problem lies within the labor market (or vice versa). By identifying and targeting the right channel, policy makers can turn youth bulge from a demographic curse into demographic dividends (Fuller, 2003). The stabilization or destabilization effect of youth bulge on political environment is determined through their interaction with prevailing social and economic institutions (Xenos and Kabamalan, 2005). Similarly, Urdal (2006), Marcus, Islam, and Moloney (2008) and Barakat and Urdal (2009) argue that whether youth bulge forms a curse or blessing depends on the social, economic and political environment within a country. Countries can capture demographic dividends when required policies are in place to capture them as indicated by Bloom, Canning, and Malaney (1999). These policies include high quality institutions, a well-regulated labor market, good economic management, a high level of trade openness, and a good education policy (Bloom and Canning, 2004). Bloom and Williamson (1998) argue that a high level of economic growth achieved by the Asian Tigers' economies may be attributed to many factors, among which is a high percentage of youth bulge and small percentage of dependent young and elderly[2]. Similarly, Bloom et al. (1999) argue that one third to one half of the high rate of economic growth in East Asia countries can be attributed to favorable demographic conditions. On the other hand, youth bulge can be a prospective source of political instability when unemployment among educated youth exceed the available employment opportunities, in countries where the level of political openness is low, or in countries with urban crowding.

Despite the importance of the role of youth bulge on political instability moderated by socioeconomic and political factors, there is little empirical research that investigates its impact. Urdal (2006) is the sole study that investigates this joint effect. The author tests the impact of the independent effect of a youth bulge and its interaction with economic growth, the level of democracy, education and urban growth rate at the onset of armed conflict using Uppsala/PRIO data set that covers a period from 1950 to 2000. He finds a significant positive relationship between the independent effect of youth bulge and the onset of armed conflict, but no relationship found between the joint effect and the onset of armed conflict. The measurement of political instability and the use of the binary estimation technique could be attributed to the inability of this empirical analysis to establish a relationship between the joint effect and political

[2] Young less than (15) years old and elderly above (65) years old.

instability. Niang (2012) indicates that measuring political instability in terms of civil war imposes restraints on empirical analysis to be carried out using logistic regression or other forms of binary or dichotomous dependent variable to study the relationship between youth bulge and political instability.

Such methods have been criticized because they are not appropriate for analyzing large panel data containing many cross section and cross time observations, especially when the number of observations of civil war is relatively small in comparison with the number of observations of peace (Goldstone, 2002). Urdal (2006) examines the impact of the joint effect on alternative measures of political instability in the form of riots, demonstrations and terrorist attacks using the PANDA data set that covers a period from 1984 to 1995. The author finds their impact on political instability is stronger in countries with high levels of educational attainment measured by growth of tertiary education. However, the data set is criticized by Urdal (2006) for reporting incidences of political instability in countries that are among high interest within the Western agenda and for the short time period of the data set. Under both measurements the author pooled all countries together without distinguishing between them, based on the percentage of youth bulge, which is important especially when political instability is measured in the form of large-scale incidences of political instability.

Within the context in mind, this research contributes to the existing literature by focusing on the role of youth bulge in enhancing political instability by considering economic, institutional and socioeconomic factors. In particular, it differs from earlier research in several aspects. First, it investigates the independent effect of youth bulge on political instability by using a broader concept of political instability that considers both small and major incidences while covering a longer time period from 1984 to 2013. Second, it measures youth bulge differently than the measurement used by Bricker and Foley (2013), who measure it as a ratio of population aged 0 to 14, by using instead a ratio of population 15-24 years old. Third, it explores the impact of youth bulge on political instability, when it is moderated by other factors. It examines the impact of the independent effect of youth bulge on political instability in sub-samples based on differing percentages of youth bulge, and the independent and joint effect on political instability in MENA region.

This expected moderation effect suggests that the presence of youth bulge constitutes political risk in a country through their interaction with the prevailing socioeconomic environment. Without the moderation effect, the relationship between

youth bulge and political instability does not establish causation run from the former to latter variable. For example, Gambia, Malawi and Botswana have a similar percentage of youth bulge among total population (the average percentage over the sample period is 36%); however, there is a significant variation in the level of political instability. Gambia and Botswana enjoy high levels of political stability (the average score over the sample period is 6.5 and 5 respectively) while the average score in Malawi is 10. The importance of socioeconomic and political environment on political instability is noted in the case of countries where the percentage of youth bulge is less than the average of the entire sample[3]. For example, the average percentage of youth bulge over the sample period in Brunei and Sri Lanka is 27% and 26.5% respectively; however, Brunei has a very stable political environment (the average political instability score is 2) in comparison with Sri Lanka (the average score over the sample period is 13). The importance of such an environment is noted in countries where the percentage of youth bulge is one half less than the average percentage over the sample period. For example, the percentage of youth bulge in Greece is 17%; however, its score in political instability (the average score over the sample period is 7.5) is higher than Gambia, Botswana and Brunei, where the percentage of youth bulge is higher than Greece. In the case of Greece, the prevailing financial crisis since 2008 led to an adverse impact on the economic environment, which in turn enhanced the adverse impact of youth bulge on the political environment.

Furthermore, youth bulge has broad needs and requirements such as education, employment and entertainment; however, the past empirical research that investigates the independent effect of youth bulge does not point out which specific unsatisfied need(s)/requirement(s) enhances their political risk. Additionally, the joint effect might reveal that the importance of such needs is varying across the different regions of the world. For example, one can expect that the need(s) and requirement(s) of youth bulge in OECD countries to be different than their counterparts in developing countries. Hence, the joint effect aims to identify the channels that link youth bulge to political instability so that it can assist policy makers in reducing their political risk.

Given that there is variation in youth bulge need(s) and requirement(s) across the world, this research examines their effect on political instability by separating the sample into OECD countries, democracy level and oil-rich countries. Moreover, such sub-samples aim to identify if there are latent factors that influence the level of political

[3] The average percentage of youth bulge in the sample over the sample period is 28%.

instability. There is general agreement among commentators that the so-called Arab Spring in the MENA region in late 2010 was initiated by a high percentage of youth bulge; however, there is debate as to which of their need(s) and requirement(s) motivated them to take part in the Arab spring. The research will identify the channel(s) that link youth bulge to political instability in the region. The sub-samples used in the thesis show significant differences in the percentage of youth bulge, such as for OECD countries and non-OECD countries, as well as in democratic and autocratic countries. They show significant variation in socioeconomic and political determinants of political instability as will be discussed in the following data analysis. They capture the effect of latent variables that are not included into the model. Furthermore, it examines the effect on political instability using 2SLS to account for a possible causation that run from instability to some independent variables, unlike past empirical research that used binary regression estimation techniques. Lastly, an alternative measure of political instability is also used for the robustness check.

To reach these expected contributions to the literature, this research tests several hypotheses. The first hypothesis posits that the higher the percentage of youth bulge in a country, the higher the risk of political instability. The second hypothesis suggests that the impact of youth bulge on political instability is lower in countries experiencing higher economic growth. The third hypothesis assumes that the impact of youth bulge on political instability is stronger in countries with high levels of unemployment. The fourth hypothesis tests whether the impact of youth bulge on political instability is lower in countries with higher levels of democracy. The role of youth bulge moderated by educational attainment is tested in the fifth hypothesis that assumes their impact on political instability is stronger when they achieve high levels of educational attainment. The sixth hypothesis assumes that their impact on political instability is lower in countries rich in natural resources.

In conclusion, the interest of this research in these joint effects is supported by Goldstone (2002) who argues that understanding the role of youth bulge on political instability requires considering the interaction between a youth bulge and prevailing socioeconomic factors. Additionally, it is driven by empirical research that finds no relationship between the independent effect of youth bulge and political instability in the form of small-scale incidences as per Bricker and Foley (2013). Moreover, it is driven by the unreasonable proposition that youth bulge is considered a necessarily

destabilizing factor; however, under the right socioeconomic and political conditions a youth bulge can facilitate economic growth as indicated by Bloom and Canning (2004).

The chapter is organized as follows: Section 2.2 reviews the literature; Section 2.3 explores the influence of socioeconomic and political factors in the role of youth bulge on political instability; Section 2.4 outlines the models, data and methodology; Section 2.5 details the estimation strategy; Section 2.6 provides the estimation results of the linear relationship of the independent effect of youth bulge; Section 2.7 gives the, estimation results of the non-linear relationship of the independent effect of youth bulge; Section 2.8 gives the estimation results of the joint effect of youth bulge and others factors on instability; Section 2.9 presents the sensitivity analysis; Section 2.10 discusses and concludes; Section 2.11 presents future research and Section 2.12 lists policy implications.

2.2 Political Instability: Literature Review

This section provides a brief overview of the common measures of political instability and the main themes within the literature that explain the general determinants of political instability. The existing literature draws mainly from Modernization theory, exploring the natural resource curse, opportunity perspectives and demographic issues relating to political instability.

2.2.1 Definitions of Political Instability in the Literature

There is no universal definition of political instability. The definitions used in the literature are classified into four categories based on the longevity and legitimacy of the political system, sociopolitical unrest and frequent changes in government within a country.

The first definition considers a country's stability when a particular type of political system continues for along time. Under this definition a country is stable when its political system, either democratic or autocratic, has survived for at least 25 years as indicated by Lipset (1960) cited by Miljkovic and Rimal (2008). Several empirical studies measure political instability by comparing a regime to itself over different time frames. Goldstone et al. (2010) use a 21-point Polity IV autocracy-democracy scale[4] to classify countries into politically stable and unstable. The authors consider a country

[4] High score suggests a high level of democracy and a low score indicates autocracy.

unstable when its score worsens by six or more points over three years. Similarly, Morrison (2009) and Smith (2004) use a 21-point Polity IV durable variable to classify countries as stable or not. The authors consider a country unstable when its annual score in the durable variable is zero. Kimenyi and Mbaku (1993) define political instability as time length from entry to exit from power by any means, one of which coup. Carmignani (2009) defines political instability by the number of changes in government head executives that occurs over five years using using a political institution data set prepared by Beck et al. (2001). Marcus et al. (2008) and Fuller (2003) construct an index of political instability based on a Conflict Barometer data set. This data set defines political instability as a conflict in values and interests over a period of time between two or more parties. Miljkovic and Rimal (2008) measure political instability using three individual definition, namely irregular government change, regular government change and a binary variable dictating whether a country is stable or not based on data from Siermann (1998).

The second definition of political instability measures the legitimacy of the political system through revolutions or other equivalent incidences. It has been argued that these incidences are an obvious indicator of political instability caused by public dissatisfaction (Sanders, 1981, cited by Miljkovic and Rimal, 2008). There are two streams under this defibition, the first stream considers these incidences individually as form of political instability. Sambanis (2001) measures instability in the form of revoluationary and other wars using a State Failure Data Set. Urdal (2006), Barakat and Urdal (2009) and Taydas and Peksen (2012) measure instability via civil war using the Uppsala/PRIOdataset. Collier and Hoeffler (1998), Collier, Elbadawi, and Sambanis (2000), Fearon and Laitin (2003), Collier and Hoeffler (2004) measure instability in terms of civil and colonial wars using the Correlates of War project. Basedau and Lay (2009) measure instability in terms of civil war using the UCDP/PRIO's conflict database.

The second stream of literature relies on revolutionary events and other incidences of political instability to create an index. Blomberg (1996), Leite and Weidmann (1999) and Mo (2001) use the data set of Barro and Lee (1994) who measure instability by the number of revoluations, coups and a measure of political assassination per one million inhabitants per year. Barro (1989) measures instability by the number of coups, revolutions and number of political assassinations per one million of the population per year individually. Alesina and Perotti (1994, 1996) include the number

of successful and unseccessful coups in their index among other incidences[5]. Londregan and Poole (1992) use the World Bank Handbook of political and social indicators to construct an index that includes successful and unsuccessful coups among other components.

The third definition shifts away from measuring political instability in the form of severe and less frequent incidences (such as civil war) to measure it in the form of socio-political unrest, which will be used in this research. The advocates of this definition argue that political instability and socio-political unrest in the form of threats to the political power of the incumbent are similar because they share common characteristics. The number of demonstrations, riots and strikes measures incidences of socio-political unrest and assassinations as indicated by Siermann (1998) cited by Miljkovic and Rimal (2008). This definition is not widely used in empirical reseearch compared to the former definitions of political instability. Smith (2004) measures political instability in the form of anti-state activities such as peaceful demonstrations, riots and strikes in a country in any given year using the Banks (1998) data set. Marcus et al. (2008), Mazhar and John (2009) and Bricker and Foley (2013) use the Conflict Barometer data set to construct an aggregate index that measures several political incidences, two of which are political instability and socio-political unrest. Urdal (2006) utilises the U.S State Failure Task Force (SFTF) project originating from PANDA at Harvard University.

The fourth definition defines political instability using myopic and polarization viewpoints, as frequent change in a government might lead to different policies. The frequent change in government provides an indication that a government lacks the political support to stay in office (Miljkovic and Rimal, 2008).

2.2.2 A Discussion of Data Sets Used to Measure Political Instability

Past empirical research measures the level of political instability in the form of civil war, coups, revolutions and political assassinations. These studies mainly use the data set provided by the Correlates of War Project (COW) and Uppsala. These data sets offer an objective measurement of political instability incidences; however, they have one common drawback in their criterion to classify an incidence as a form of political instability. This criterion requires a pre-specified death case to have occurred in order to

[5] Lane and Tornell (1996) and Perotti (1996) use the political instability index constructed by Alesina and Perotti (1996).

consider an incidence as form of political instability as indicated by Gleditsch, Wallensteen, Eriksson, Sollenberg, and Strand (2002)

The Correlates of War Project has been used since 1972 in the empirical literature of political instability. It sets a threshold level of 1000 battle deaths as a minimum number for a conflict to be considered as a form of political instability. This high threshold excludes some conflicts from the data set when rationally they should perhaps be regarded as conflicts (such as Basque and Northern Ireland conflict) because they have a lower death toll. A high threshold level dictates statistical analysis for only several discrete civil wars over a short period of time. Addressing this issue by increasing the number of observations by extending the time period or by splitting the sample into more than one sub-sample leads to several problems. Theoretically, potential explanations cannot be reasonably meaningful for the entire time period. For example, economic development in 1900 is not the same as in 2014. Splitting the sample into many sub-samples within a reasonable time length may produce insignificant results because the number of civil wars are not equally distributed over different time spans (Gleditsch et al., 2002).

The second data set, Uppsala, follows the death toll criterion to consider incidences as form of political instability similar to the Correlates of War Project. However, it reduces the threshold level to be equal to, or more than, 25 cases. It considers an incidence as form of political instability when two or more parties are involved in a conflict, one of which is a governmental force. It classifies a conflict as severe when the death toll exceeds one thousand; otherwise it is minor (Gleditsch et al, 2002). It has been intensively used in prior empirical research (Marcus et al., 2008).

The failure of past empirical research to establish the relationship between the independent effect of youth bulge and political instability could be attributed to the definitions and criterion used by the COW and Uppsala data sets to classify incidences as forms of political instability. Defining political instability exclusively in the form of civil war ignores the reality that there is a decreasing trend in total civil wars worldwide. Flanigan and Fogelman (1970) and Gurr (2000) indicate this is because many nations tend to settle their disputes via other peaceful means, resulting in fewer civil wars in the 20th than 19th century. Goldstone (2002) notes that there are a decreasing number of civil wars in the twenty-first century. Flanigan and Fogelman (1970) argue that some regions in the world are more prone to specific forms of political

instability, for instance, Latin America is more prone to socio-political unrest than civil war, whereas other regions like sub-Saharan Africa experiences the opposite.

While other authors agree that civil war is one form of political instability, they argue that its determinants are different to socio-political unrest or civil disobedience. For example, Fearon and Laitin (2003) attribute civil wars in Eastern Europe, former Soviet countries and sub-Saharan Africa in the 1990s to ethnic minorities fighting a dominated majority to readdress religious, nationalist, or economic grievances. Therefore, some authors such as Bricker and Foley (2013) argue that these data sets are more appropriate to study the causes of large-scale incidence like war, not other incidences of political instability - one of which is the role of youth bulge on political instability. Statistically, Niang (2012) indicates that measuring political instability in terms of civil war imposes restriction on empirical analysis to be carried out using logistic regression or other forms of binary or dichotomous dependent variable to study the relationship between youth bulge and political instability. Such methods have been criticized because they are not appropriate to analyze large panel data containing many cross sections and cross time observations, especially when the number of observations of civil war is relatively small in comparison with the number of observations of peace (Goldstone, 2002).

The statistical difficulty of analyzing the determinants of political instability using a data set that adopts a death toll criterion, such as COW and Uppsala, leads to the introduction and use of other data sets in empirical research like SFTF project, originating from the PANDA at Harvard University. The SFTF project measures political instability in the form of terrorism, riots and violent demonstration (or what is termed political-social unrest). Although it measures small-scale incidences of political instability it has been criticized for its bias towards countries where the Western agenda prevails. For example, Sub-Saharan countries experienced 35% of total global political instability incidences from 1955 to 2003 but are not well represented by the data set (Urdal, 2006). Another drawback is that it measures the number of violent incidences but not their intensity (Neumayer, 2004).

The empirical research has shifted to another data set that has a broad definition of political instability and contains criterion to identify its intensity, like the Conflict Barometer[6]. This data set is published by the Heidelberg Institute for International

[6] Used by Marcus et al. (2008) and Bricker and Foley (2013).

Conflict Research (HIIK), a research centre at the Department of Political Science, University of Heidelberg, Germany. It defines political instability as conflict of values or interests between two or more groups in a country over a period of time. The definition considers incidences such as formal and informal interstate and small-scale violence like riots to measure the level of political instability. It uses a scale of 5 to measures conflict in areas of territory, secession, decolonisation, autonomy, system/ideology, national power, sub national predominance and international power and resources. Each area is divided into additional sub-areas. The scale is used to measure the intensity of instability, in which 1 indicates dispute, 2 non-violent crises, 3 violent crises, 4 limited war and 5 war. The annual total score of each country is calculated as the sum of scores in all areas. The data is available for the period from 1992 to 2013 and all are available in English language except reports from 1992 to 1996 and 1998 to 2001, which are available in German language (HIIK, 2014).

There are very few empirical studies that examine the relationship between youth bulge and political instability in the form of socio-political unrest (see, for example, Fuller 2003, Urdal 2006, Marcus et al. 2008). These studies have drawbacks related to the data set used in the analysis or the definition used to measure political instability. The Urdal (2006) study is considered the most pivotal and comprehensive in area of the role of youth bulge on instability; however, it has all the above-mentioned drawbacks. First, it uses the Uppsala and SFTF data set to measure political instability, which is more appropriate with war studies (Marcus et al., 2008). Second, it uses a sample covering a long period of time from 1950 to 2000, which raises difficulties when it comes to theoretical explanation (Gleditsch et al., 2002). Third, it uses logistic regression (onset of armed conflict or not) in the analysis, which has been criticized because the number of conflicts is significantly less than the number of stable political situations (Goldstone, 2002). The second seminal study, carried out by Bricker and Foley (2013), uses the Conflict Barometer to address the issue of limiting political instability to civil war. However, they measure political instability as a sum of all internal and external conflicts, disputes or other conflicts with bordering countries, claiming that the proxy is more able to capture the role of youth bulge on instability. One can argue that conflict across borders has nothing to do with youth bulge; in contrast, it might increase the level of internal political stability because it leads the public to place their dissatisfaction of government performance aside and increase their support for government to deal with external risk. Marcus et al. (2008, p. 15) indicate that "*Youth violence is more spontaneous than the violence perpetrated by national*

governments and it does not always escalate to this level. Youth bulges and busts are likely to be associated with violence more generally conceived than with military actions involving national governments". The third important study carried out by Marcus et al. (2008) does not directly address political instability; instead its main objective is business risk associated with demographic age structure, with an emphasis on youth bulge.

2.2.3 Modernization Theory and Political Instability

The oldest stream in the literature used to explain the variation in the level of political instability across both time and different countries is Modernization theory, developed by Deutsch (1961) and Huntington (1968) as indicated by J. A. Goldstone et al. (2010). Modernization theory assumes that political instability is a product of imbalance in growth rate of politics and socioeconomic factors in a society. These factors are a high level of educational attainment and literacy, urbanization and industrialization. These processes lead to significant changes in norms and values that can create an orientational upheaval (Stavestrand, 2013).

2.2.3.1 Educational Attainment and Literacy

It has been suggested that a country going through a modernization stage witnesses a high level of educational attainment. The effect of educational attainment on the level of political instability filters through economic and political channels. Economically, educational attainment increases the risk of political instability when economic growth or economic size fails to create employment opportunities to absorb the increasing number of job seekers among educated youth (Lia, 2007). Winckler (2002) and Goldstone (2002) point out that historically, high levels of educational attainment precede political instability incidences. Politically, educational attainment has been suggested to develop civic skills among youth; consequently, it produces a generation that is more likely to seek democracy than an uneducated generation. The risk of political instability in a country increases when the political system does not have channels to accommodate the civic skills of this educated generation (Huntington, 1968). Hence, a higher education level may increase political instability in a country have low level of democracy or small economic size.

The existing studies reach mixed results concerning the relationship between educational attainment and political instability. Urdal (2006) finds a significant positive relationship between tertiary education and probability of civil war. It suggests that high

level of level of tertiary education enhances the probability of civil war. Contrarily, other empirical research finds that educational attainment has a stabilizing effect. Collier and Hoeffler (2004) and Barakat and Urdal (2009) find a negative relationship between secondary education and onset of civil war. Likewise, Alesina and Perotti (1996) find that a country with a high level of primary education is more stable. However, Goldstone et al. (2010) find no relationship between educational attainment (measured by secondary and tertiary education) and political instability when measured by instances of armed conflict. Xu (2011) finds no impact of primary and secondary school enrolment on stability. These conflicting results could be attributed to the proxy used to measure educational attainment. Primary school enrolment is an appropriate proxy to be used in case of reasonably undeveloped countries; however, in many countries around the globe youth bulge with higher than secondary level attainment are expected to significantly contribute to economic growth that may lead to stability in a country, as indicated by Miljkovic and Rimal (2008). Furthermore, Fuller (2003) indicates that unlike well-educated youth, barely-educated youth can accept any available employment opportunities and are less likely to commit political violence.

2.2.3.2 Urbanization Growth Rate

There are two conflicting views about the impact of urbanization on the level of political instability. The first view supports the argument that it leads to high levels of political instability. It argues that high levels of urbanization growth rate produced by natural population growth rate or high levels of rural-urban migration lead to concentrations of a high percentage of the population in a small geographic area who may be ready to facilitate collective action against government (Goldstone, 1991). Urbanization growth rate becomes a prospective source of political instability when its growth rate exceeds the growth rate of employment and educational opportunities (Urdal, 2006). Empirically, Smith (2004) finds a significant positive relationship between population density and incidences of political instability such as civil war, civil disorder or regime failure.

The second view supports the argument that a high level of urbanization is associated with low level of political instability. Collier and Hoeffler (2004) indicate that a high level of urbanization reduces the risk of political instability. They argue that low population density and urbanization inhibit government ability, especially in countries with low levels of economic development. They support their view empirically with data that the distribution of population over a large geographic area is

associated with a high risk of civil war. In another study, Collier and Hoeffler (2002) find in panel data analysis comprising a group of African countries a negative, although not significant, link between population density and political instability.

2.2.3.3 Industrialization

The third process of modernization is industrialization. A country going through the industrialization process experiences diversity in economic activities and occupations, transfers from subsistence to market agriculture and experiences increases in the ratio of capital to labor (Huntington, 1968). It also experiences rapid changes in the existing culture or social system, or both (Sorokin, 1962). There are two views relating to the impact of industrialization on political instability. The first view assumes it has a destabilizing effect while the second assumes it has a stabilizing effect.

The destabilizing effect view assumes that rapid economic growth increases the level of income inequality; consequently, it increases the level of grievance that leads to political instability. Oslen (1963), Huntington (1968) and Ansani and Daniele (2012) indicate that the level of income inequality increases because the benefits from economic growth are not distributed equally across the population. Huntington (1968) indicates that rapid economic growth increases the inflation rate that exceeds the increases in wage level. Rapid economic growth associated with industrialization produces severe social disorder that loosens the relationship between an individual and the existing social order such extended family and the village that tends to support the individual (Huntington, 1968). In the absence of a well developed institutional structure that compensates for the diminished role of the traditional system to deal with overlooked workers, rapid economic growth might lead to instability (Hibbs,1973).

Just such an institutional structure is attributed to the stabilization effect of modernization in the case of Western Europe and Northern America. These countries have successfully created a system that integrates all classes in society (Hibbs, 1973). The destabilization effect view is based on the rate change associated with industrialization and how a country deals with its associated problems. Early modernization spread over a long time period unlike contemporary equivalents. For example, modernization in England took 183 years from 1649 to 1832. For countries that entered the modernization process during the Napoleonic period from 1789 to 1815, the average period to reach the consolidation of modernizing leadership was 73 years. For countries that started the modernization process in the late 1960s, the process took

less than 29 years. It is estimated that the change rate in the principal social indicators such as primary and post-primary enrolment, urbanization and infant mortality rate is 1% per year in the 20th century's modernizing society while it was only 0.1% per year in the 19th century. As a result, countries in Asia, Africa and Latin America that have gone through the modernization process in the aftermath of the Second World War have experienced political instability incidences. The second channel that causes contemporary modernization to breed political instability is the management of its problems. Contemporary modernization needs to deal with its process simultaneously; however historical modernization dealt with it subsequently. This increases the risk of political instability, especially when there are no political institutions to deal with each process of modernization individually (Huntington, 1968). Other authors like Sandbakken (2006) argue that industrialization leads to political instability because it produces middle classes who are financially independent from the government. The author indicates that the successful revolution against the Shah regime in Iran 1979 is attributable to the existence of large merchant groups who were financially independent from the regime.

The second view assumes that industrialization, measured by economic growth, GDP per capita or other indicators of the level of economic development, has a stabilization effect. It assumes that economic growth in a country is an important factor that influences an individual's opportunity cost to commit political instability incidences. High levels of economic growth create an abundance of employment opportunities that increases an individual's opportunity cost to commit political instability incidences (Collier and Hoeffler, 2002). Blattman and Miguel (2010) argue that economic conditions in terms of economic growth and level of income are a good predictor of the level of political instability when it is measured by civil war.

There is a general agreement in the empirical literature that poor economic growth enhances political instability. Collier and Hoeffler (1998) and Collier and Hoeffler (2002) find that poor economic growth leads to high probability of civil war. Alberto Alesina, Özler, Roubini, and Swagel (1996) find that poor economic growth leads to political instability when measured by political assassinations, revolutions or coups. Marcus et al. (2008) find a negative relationship between economic growth and level of political instability when it is measured by a broader definition of political instability that comprises both small and large-scale incidences. Urdal (2006) finds that low economic growth leads to political instability measured by civil war, terrorism, riots

and violent demonstrations. Collier and Hoeffler (2004) and Taydas and Peksen (2012) find that low economic growth leads to political instability when measured by civil war. Andersen and Aslaksen (2013) find that positive economic growth decreases the level of political instability when it is measured by executive removal in a given year. Morrison (2009) finds that negative economic growth increases the probability of regime instability measured as a binary variable documenting whether there is change in regime or not using a Polity IV durable variable. Smith (2004) finds an insignificant negative relationship between economic growth and regime failures, a significant negative relationship with social protests and significant negative relationship with onset of civil war. Bricker and Foley (2013) find that positive economic growth reduces risk of political instability. Only Goldstone (2010) finds no relationship between annual economic growth and civil war.

Circumventing both streams discusses above, another stream in the empirical literature measures industrialization by GDP per capita, and while these studies agree that it is a good indicator of the level of political instability, the shape of the relationship, whether linear or non-linear, is less clear. In the non-linear relationship camp, Kerr et al. (1960) conclude that there is a curvilinear relationship. According to Kerr et al. (1960), societies at early and late stages of modernization are less likely to experience political instability incidences, whereas societies in the middle level of economic development are more likely to witness political instability incidences. Similarly, Feierabend et al. (1960) cited by Hibbs (1973) analyzed the political instability and level of economic development of 74 countries and finds a moderate curvilinear relationship. Others, like Russett et al. (1966) cited by Hibbs, (1973) claim that the curvilinear model is the best to capture the relationship between the death toll from domestic violence and gross national product per capita.

Some empirical research examines and finds a linear relationship between different proxies of the level of economic development and the level of political instability. Flanigan and Fogelman (1970) find a negative and linear relationship when the level of economic development is measured by the percentage of labor force in the agriculture sector and gross national product per capita. Rubin and Schainblatt (1960) cited by Hibbs (1973) find a negative and linear relationship when it is measured by energy consumption per capita. Collier et al. (2000), Fearon and Laitin (2003), Collier and Hoeffler (2004), Urdal (2006) and Taydas and Peksen (2012) find a negative and linear relationship when it is measured by armed conflict. J. A. Goldstone et al. (2010)

find a positive and linear relationship when it is measured by infant mortality rate. Other empirical research finds no relationship between the two variables using different data sources and statistical techniques (Hibbs 1973). Barakat and Urdal (2009) find an insignificant negative linear relationship between GDP per capita and the onset of internal armed conflict. Andersen and Aslaksen (2013) find an insignificant positive linear relationship between GDP per capita and regime survival. Sambanis (2001) finds a weak and insignificant negative linear relationship between the level of economic development measured by energy consumption and the onset of civil war. Bricker and Foley (2013) find an insignificant positive linear relationship between GDP per capita and the onset of small-scale political instability incidences. Other empirical research finds a significant positive between the two variables, such as Marcus et al. (2008) who find a significant positive linear relationship between GDP per capita and the onset of domestic conflict.

2.2.4 Curse of Natural Resources

This section discusses the impact of natural resources rents on the level of political instability. The literature has three dominant streams, namely the Rentier State theory, repression [7] and rent-seeking concepts. The main differences among these streams is whether rents from natural resources have a stabilizing or destabilizing effect on a country (Smith 2004).

2.2.4.1 Rentier State Theory

Studies in the political economy of rents from natural resources, especially oil, focus on its impact on institutional, economic and political aspects. The impact on these aspects increases the level of political stability according to Rentier State theory (Delacroix,1980), which is in contrast to modernization theory that assumes modernization leads to democracy or political instability.

Institutionally, governmental activities in a rentier state are developed to carry out distributive function rather than an extractive function (Delacroix, 1980). Its function is collecting oil rents and setting plans to distribute these across different segments of a society through direct and indirect distribution channels. A direct distribution channel takes the form of expenditure on education, health services, employment and infrastructure. Expenditure on these sectors increases public loyalty to a government because the public sees it as promoter of economic development. Indirect

[7] Repression will not be covered because it is beyond the scope of this research.

transfer systems are mainly designed to distribute oil rents to a narrow network of individuals who receive personal favors from governments in the form of the distribution of licenses, projects and contracts (Sandbakken, 2006). M. Ross, Kaiser, and Mazaheri (2011) indicate that the rent seeking and patronage relationship between a government and its elite leads to a high level of political stability in oil countries. Herb (1999) points out that oil rents have a stabilization effect on monarchies in the Arabian Peninsula through welfare expenditure and the patron client network. A government relying on oil rents to finance distributive expenditure does not need to tax the public, which leads to under-developed tax systems (De Mesquita and Smith, 2009). Free tax environments reduce public pressure on governments to move towards democracy under the justification of no representation without taxation (Sandbakken, 2006). The absence of a democratic environment frees governments from checks and balances that restrict its ability to pursue its own agenda (Taydas and Peksen, 2012).

Politically, the absence of political accountability has an adverse effect on institutional quality. Studies show that oil rents negatively affect the rule of law, the quality of bureaucracy and level of corruption. However, the use of several measurements of institutional quality makes it difficult to determine which aspects are related to the abundance of natural resources and which are relevant to growth (Sachs and Warner, 1999). As a result, the overall society prefers to involve in rent-seeking activities rather than alliance building and raising political unrest. This creates a strong resistance from different interest groups to a reform agenda that gives equal opportunities to all of the population (Sandbakken, 2006).

Economically, a rentier state plays a major role as an engine of economic growth and consequently as an employer. This is because its policies are neither oriented towards developing industry nor growth-oriented policies that foster the independent middle class that may seek democracy (Lipset, 1959, cited by De Mesquita and Smith, 2009). As a result, a rentier state government becomes a major employer who successfully replaces the independent middle class with a financially dependent class of civilian employees in the public sector and military officers (Sandbakken, 2006). Okruhlik (1999) points to Saudi Arabia as a typical example of rentier state, where rents from oil have a stabilizing effect because prosperity of private citizens is conditional upon their acquisition of government wealth via access to jobs, information, contracts and projects. This access is gained through personal relationships, friendships, religious branches and regional affiliation.

The direct and indirect distribution channels help a government to eliminate the risk of two typical sources of political instability incidences: rivals in the political system and mass anti-government movements (De Mesquita and Smith, 2009). Ross (2001) examines the causal relationship between oil wealth and democracy and finds that there is a positive correlation between oil wealth and military expenditure, which in turn is associated with authoritarianism. The author indicates that political instability incidences can occur as a result of other factors like ideology, which becomes more important than financial and economic benefits.

2.2.4.2 Oil Rent Seeking Theory

Oil rent-seeking, distributional inequality and the greed motive rebellion (or what is called the oil as spoils thesis) consider natural resources rents as prospective sources of political instability in rentier states. The risk increases because of greediness, income inequality, fluctuation in oil prices, modernization, corruption and a poor macroeconomic environment.

Rents from natural resources revenues are an attractive target to rebellions or state breakers, especially when these resources are located in a region with pre-existing ethnic or religious grievances. Furthermore, the expensive oil production equipment is an attractive target for gang and anti-government movements, particularly when they are located in remote areas. For example, municipalities in Colombia often experience paramilitary violence, especially during boom periods (Smith, 2004).

Rents from natural resources may increase the risk of political instability through income distribution patterns that exclude whole segments of the population or provide some segments with financial means to challenge a government. The unequal distribution of rents from natural resources increases the risk of political instability. Morrison (2009) indicates that one prospective source of political instability in a dictatorship is the unequal distribution of income. Shambayati (1994) indicates that the Iranian revolution in 1979 was partially caused by unequal income distribution that raised demand from the public to understand the distribution mechanism used for oil revenues. Therefore, some suggestions have been made to turn equal income distribution pattern into a source of political stability. M. Ross et al. (2011) use the MENA region as an illustrative example, suggesting that subsidy programs in countries in the MENA region should be revised to target the most aggrieved societal segments that are likely to initiate political instability incidents. The obvious shortcoming in the

current subsidy programs is that they distribute subsided products and services across all society without any distinction as to their financial capabilities. Accordingly, some segments in a society continue to live in poor conditions because the government has failed to design a subsidy program that satisfies their needs. Governments typically ignore the revision of current subsidy systems because it constitutes political cost. Okruhlik (1999) indicates that in the case of Saudi Arabia, welfare expenditure among the public is perceived as a citizenry right more than the positive consequences of a boom period. Another possibility is to increase transparency in the distribution process and budget procedures to eliminate the negative consequences on political stability (Sandbakken, 2006). In general, distribution programs pose a challenge for prospective political and economic transitions in the region. The pattern of income distribution provides interest groups with the financial means to challenge a government (Ross et al., 2011). For example, Okruhlik (1999) indicates that the government in Saudi Arabia creates its own enemy through the pattern of oil rent distribution.

The risk of political instability increases because of fluctuations in oil prices that put a government under financial pressure to maintain different forms of distribution. Lowi (2004) notes that economic shock forced the Algerian government in the 1990s to eliminate welfare expenditure amidst increasing demand due to rapid population growth. This created general dissatisfaction that led to political instability. In contrast, Smith and Bueno de Mesquita (2010) cited by Ross et al. (2011) argue that oil rents help authoritarian rentier states to smooth economic conditions during crises. Thus, they do not make any progress towards democracy.

Rents from natural resources further increase the risk of political instability by feeding processes of modernization. Ross et al. (2011) indicate that rents from natural resources in the MENA region increases the level of rural-urban migration, which in turn increases pressure on the labor market that leads to increased unemployment. Rents increase the level of educational attainment and political awareness among youth but institutional structure has not developed enough to accommodate such a change. Shambayati (1994) presents the impact of oil rents on the socioeconomic and political environment in Iran prior to the 1979 revolution. Oil rents speed up the level of rural-urban migration with the hope that urban life will improve the migrants' living standards; however, migrants are generally disappointed when their expectations are not met. This creates feelings of actual and relative deprivation amongst a wide segment of

a society. This is exactly what happened in Iran and which set the stage for the Iranian revolution in 1979.

Oil rents have an adverse impact on institutional quality, which in turn increases the risk of political instability as found by several empirical studies. Poor institutional quality has substantial costs on public welfare through its adverse impact on economic growth and investment as indicated by O'Sullivan, Rey, and Galvez Mendez (2011). Ross et al. (2011) present the negative impact of corruption on privatization projects that aim to develop the vital private sector in the MENA region. The authors indicate that the privatization process in the region, especially in low and middle economies such as Egypt, Yemen and Tunisia, is characterized by a high level of corruption, patronage and lack of motivation and continuity. Shehata (2011) indicates that the factors that led to the fall of the Mubarak regime in 2011 were an increasing level of corruption and economic exclusion. As a result of a high level of corruption, economic growth achieved in the region over the past decades did not lead to increases in the level of GDP per capita. The impact of corruption on creating an economic environment where the private sector is an engine of economic growth can be observed from the imbalance between economic growth and population growth. In the MENA region, over the period from 2000 to 2010 the average economic growth was 4.8% that not match GDP per capita growth, which is 2.5% over the same period. This suggests that annual economic growth is less than the population growth rate. The gap between these two growth rates is considered among the highest in the world, below only sub-Saharan Africa (O'Sullivan et al., 2011). Rents from natural resources increases fertility rates and lowers child mortality rates, which results in a sudden increase in the ratio of youths to total adult population (a youth bulge). This is witnessed as consequences of the 'Dutch disease story' and welfare expenditure systems in rentier states[8]. The 'Dutch disease' crowds out women from some typical sectors in the economy that employ women, such as agriculture and export-oriented manufacturing sectors. Furthermore, the governmental welfare system makes it unnecessary for women to seek employment in order to assist their household with a second income (M. Ross et al., 2011).

2.2.4.3 Past Empirical Literature in Natural Resources-Political Stability Nexus

Like theoretical literature, empirical literature concerning the impact of rents from natural resources on the level of political instability show mixed results. Empirical

[8] 'Dutch Disease' is the negative consequences on an economy resulting from a sharp increase in inflow of foreign currency from oil rents.

studies show oil wealth leads to political instability due to associated rent-seeking activities under the 'oil-and-spoils thesis' (Bjorvatn and Naghavi, 2011). However, the literature in rentier states shows that oil rents have a stabilizing effect on a society due to different distribution channels used to pacify different segments in a society.

The first stream in the empirical literature examines the linear relationship between oil rents and political instability measured by civil war, ethnic war and domestic armed conflict, and in rare cases its impact on other incidences of political instability; however, they reach mixed results. The first group of empirical research finds no relationship. Goldstone et al. (2010) find no relationship when natural resources rents measured as the percentage of fuel exports to merchandise exports or as a percentage of crude petroleum exports to all commodities or as a percentage of ores and metal exports to merchandise exports. Fearon and Laitin (2003) find no relationship when natural resources rents are measured as primary commodity exports. Bricker and Foley (2013) find no relationship between natural resources rents measured as a percentage of GDP and the level of political instability. The second group finds a positive relationship between the two variables. Isham, Woolcock, Pritchett, and Busby (2005) find a positive and significant relationship between natural resources rents when measured by the share of primary export to GDP and the level of political instability. Taydas and Peksen (2012) find a significant positive relationship when oil rents constitute 30% of export revenues and the onset of civil war. The third group finds a negative relationship. Andersen and Aslaksen (2013) find a negative and significant relationship between natural resources rents when measured as the percentage of oil income to GDP and the level of political instability. Smith (2004) finds a significant negative relationship between natural resources rents when measured as a percentage of oil exports to GDP and regime failure, the onset of civil war and anti-state movement.

The second stream in the literature examines the quadratic term of rents from natural resources and political instability. This stream finds that the level of political instability is high when oil rents are low, no effect in the middle ground and at a high level, oil rents decrease political instability. Collier and Hoeffler (2002) and Collier and Hoeffler (2004) find a significant quadratic relationship with the onset of civil war when natural resources rents are measured as a ratio of primary commodity exports to GDP. Collier et al. (2000) find that natural resources rents are significantly and non-monotonically associated with probability of civil war onset. Basedau and Lay (2009) find that natural resources rents when measured by oil production per capita are significantly and non-monotonically associated with civil war onset. Bjorvatn and

Naghavi (2011) find empirically that the relationship between oil rent and political instability is non-monotonic.

The last stream suspects the validity of the empirical link between the two variables. Blattman and Miguel (2010) find that this relationship is weak and controversial. They argue that economic conditions in terms of economic growth and low incomes are better predicators for armed conflict in less developed countries than rents from natural resources.

2.2.5 Opportunity Perspective

The opportunity perspective assumes that the risk of political instability is high when an individual has a low opportunity cost and a rebellion movement can control primary commodity exports. An individual's opportunity cost is influenced by education, which in turn is realised by labour market performance. At one extreme, education increases an individual's opportunity cost to join a rebellion movement by increasing his value in the labour market and expanding the prospective income-earning opportunities before him. At the other extreme, education raises an individual's expectations in terms of employment opportunities and their associated financial benefits, which, if they are not met, make the opportunity cost low; subsequently, an individual becomes more likely to join rebellion movements. When labour markets are not rewarding, an individual finds it feasible to join rebellion movements because other income-earning opportunities are low. Rebellion movements can successfully hire labour when it gains access to financial resources. One of the easiest sources is to control primary commodity exports. Production of primary commodities does not need a complicated network of information and transaction like manufacturing. It is more profitable than manufacturing because it depends on extracting natural endowment. Alternatively, rebellions may target long trade lines from production area to export port. A combination of the availability of financial resources for rebellion, an individual low opportunity cost and abundance of youth speeds up the recruitment process (Collier, 2000). Goldstone (2002) indicates that a rebellion movement is likely to succeed in a country when the movement controls the primary commodity exports, there is an abundance youth labor supply and there is weak or fragile government that lacks the required means to crush the movement, whether peacefully or by force.

2.2.6 Youth Bulge and Political Instability

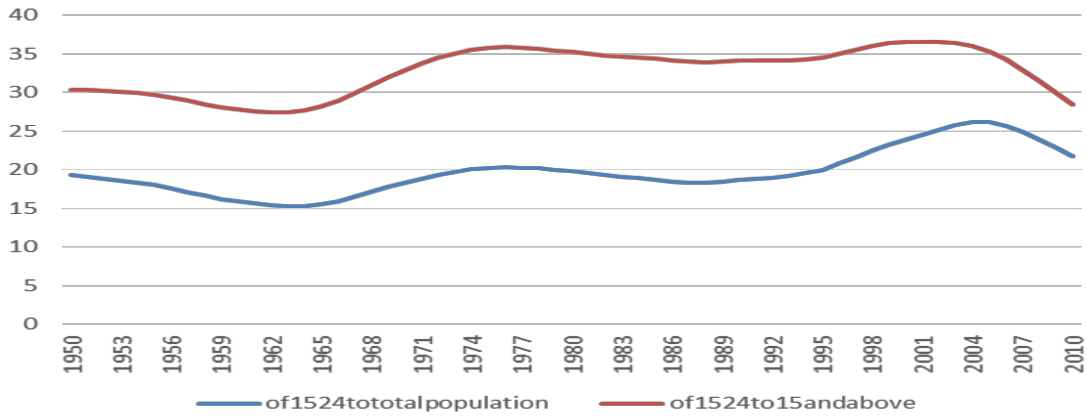
There are two views regarding the impact of youth bulge on political environment. The first view assumes youth bulge has a stabilization effect under the so-

called demographic dividends thesis, while the second view assumes youth bulge has a destabilization effect under the so-called demographic curse (Fuller, 2003). Several authors point out that the realization of either effect depends on a country's socioeconomic and political environment. Xenos and Kabamalan (2005) indicate that the nature of the youth bulge impact on political environment is a function of their interaction with socioeconomic and political environment. Correspondingly, Urdal (2006), Marcus et al. (2008) and Barakat and Urdal (2009) argue that whether youth bulge is curse or blessing depends on the social, economic and political environment of a country.

History presents several examples of socioeconomic and political environment that turns youth bulge into demographic curse. The French revolution in 1789 is partially attributed to a high percentage of youth bulge. The rise of Nazism in Germany in the 1930s is seen as a result of economic depression that increased youth unemployment (Moller, 1968) cited by Urdal (2004). Contemporary history offers some examples of the role of youth bulge on instability, such as the Islamic revolution in Iran in 1979 and Algeria[9]. Figure 2.1 shows the percentage of youth bulge in age bracket 15-24 years old to total population and their percentage to population in age bracket 15 and above from 1950 to 2010 in Iran. The former percentage reaches its peak at around 20% and the latter percentage reaches its peak around 35.5% prior to the Iranian Islamic revolution in 1979. Both percentages are above 20% for the entire sample period. In the case of Algeria, Trends (2001) indicates that Algerian youth contributed to ongoing violence in the 1990s as a result of low employment, educational and housing opportunities. The author presents several examples of the role of youth bulge on instability in other regions in the world: conflict between Kurdish and Turkish governments in 1995 was sparked by high percentage of youth bulge; successful coups in Turkey in 1970 and 1980 were caused by youth bulge who experienced unemployment and low educational opportunities; armed conflict between the Sinhalese national insurgency and Tamil rebellion onset in Sri Lanka in 1970 turned severe in the 1980s when the percentage of youth bulge in age bracket 15 to 24 years old to total population reached its peak; and conflict in Northern Ireland is attributed to youth bulge (Ulster more than Catholic).

Figure 2.1 the Percentage of Youth Bulge in Iran from 1950 to 2011

[9]The armed conflict between the Algerian government and various Islamic groups, which began in 1991 and ended in 2002.



In other countries socioeconomic and political environment turn youth bulge into demographic dividends. Bloom and Canning (2004) point out that a country can capture demographic dividends associated with youth bulge when it has in place high quality institutions, a well-regulated labor market, good economic management, high levels of trade openness, and a good education policy. Bloom and Williamson (1998) use the Asian Tigers as illustrative examples of countries that succeed in capturing demographic dividends associated with a high percentage of youth bulge and small percentage of dependent young and elderly[10]. Bloom et al. (1999) indicate that favorable demographic conditions is a root cause of one third to one half of the high rate of economic growth in East Asia countries.

2.3 The Influence of Socioeconomic and Political Factors in the Role of Youth Bulge on Political Instability

There is a general agreement that socioeconomic and political environment influence the level of political instability in a country (Goldstone, 2002). The following sub-section presents the influence of economic growth, unemployment, level of democracy, educational attaintment, and rents from natural resources on the role of youth bulge on political instability.

Despite of the importance of the influence of socioeconomic and political environments in the role of youth bulge on political instability, the moderation effect has received less attention in the empirical literature (as mentioned in earlier sections). These environments play an important role in determining the prospective outcome of a high percentage of youth bulge on a country's political environment (as discussed in section 2.2.6). They can turn youth bulge into demographic dividends through boosting economic growth or they can enhance their adverse impact on political environments by

[10] Young in age less than (15) years old and elderly in age above (65) years old.

turning them into demographic curse. Furthermore, opportunity and grievance perspectives explain the role of youth bulge by considering these environments. Opportunity perspective states that a combination of high level of educational attainment among youth bulge and a tight labor market reduces youth opportunity cost so that their risk to political stability is increased (Collier, 2000). Grievance perspective emphasizes the importance of some factors, including lack of democracy, to escalate an individual's grievance level (Goldstone, 2001). Likewise, modernization theory indicates that instability is a result of imbalance between growth rate in socioeconomic and political environments. It points out that one prospective channel of instability is the failure of labour markets to match an increasing number of educated youth. Similarly, according to this theory, instability can be caused by educated youth who develop civic skills yet development of their political systems fails to advance. Anecdotal observations based on historical incidences of the role of youth bulge on instability point to a combination of high percentage of youth bulge in countries that experience limited educational and employment opportunities and where there is insufficient political channels to raise their demand peacefully, thus exaggerating their adverse impact on political environment. In summary, all of these explanations point out that contextual environment gives the youth bulge motive to commit political instability incidences. Explanations of their role on instability without considering their interaction with these environments may lead to the establishment of weak causal relationships between youth bulge and instability.

2.3.1 Economic Factors

Past empirical research finds that economic environment measured by the independent effect of economic growth (or alternative measurement) is good predictor of political instability in a country, all other thing being constant. Alberto Alesina et al. (1996) find empirically that low economic growth can lead to political instability when it is measured by unconstitutional government change. Bricker and Foley (2003) argue that strong performance of economic environment measured by trade openness brings benefits to a wide range of society, making violence less likely. The authors find empirically that a high level of trade openness boosts the level of political stability.

The risk of political instability in a country is enhanced when poor performance in economic environment occurs jointly with a high percentage of youth bulge. Their role increases because of the failure of economic size or its growth rate to create employment opportunities to absorb the increasing number of youth bulge (Lia, 2007).

Brett and Specht (2004) find that low employment opportunities are likely to motivate an individual to join anti-government movements. The economic environment enhances their role on instability when income opportunities are determined by overall economic performance (Urdal, 2006). Other authors point out that the youth bulge political risk increases because economic environment determines forgone income that decreases an individual's opportunity cost; consequently, the probability of committing political instability incidences increases. Collier and Hoeffler (2004) show that recruitment of individuals for rebellion during the Russian civil war was ten times higher in summer than winter because the recruited were villagers and their forgone income was much higher during harvest time. In summary, economic environment determines the youth opportunity cost to commit political instability incidences through potential employment and income prospects as well as forgone income. A country with strong economic performance that produces abundant employment opportunities with rewarding income prospects eliminates the political risk of youth bulge caused by low opportunity cost.

Countries rich in oil resources are expected to face less political risk from the presence of high percentage of youth bulge than non-oil countries. Instability deescalates through different forms of distribution expenditure as suggested by rentier state theory or forces as suggested by repression theory. According to rentier state theory, countries abundant in natural resources succeed in stabilizing their political environment through high levels of expenditure in areas that are suggested to be among the determinants of political instability, such as shortages in educational opportunities, lack of employment opportunities and poor economic growth (Sandbakken, 2006).

High level of educational attainment enhances political instability over the long run when economic growth or economic size fail to create employment opportunities for increasing number of educated youth (Lia, 2007). The situation gets worst in oil countries because of lack of economic diversification as a result of Dutch disease. However, such risk is eliminated in oil countries by creating massive public employment. This stabilizes the political environment through replacing the independent middle class in a country (who are likely to form opposition movements against it) with a financially dependent class of civilian employees in the public sector and military officers (Sandbakken, 2006). Okruhlik (1999) indicates that rents from natural resources in typical rentier states like Saudi Arabia succeed in stabilizing the political environment because prosperity of private citizens is conditional upon their

acquisition of government wealth through access to jobs, information, contracts and projects.

High level of educational attainment enhances political instability through low level of democracy. Its high level produces a generation that is more likely to seek democracy, which, if not met, leads to instability as suggested by Huntington (1968). However, such risk is eliminated in oil countries by not imposing taxes on the public. Sandbakken (2006) points out that reliance on oil rents as a main source of government revenue reduces public pressure on a government to adopt democracy under justification of no representation without taxation. A government in the absence of democracy is free to take different measurements to stabilize their political environment such as military and security forces. Ross (2001) examines the causal relationship between oil wealth and democracy and finds that there is a positive correlation between oil wealth and military expenditure, which in turn is associated with authoritarianism. In summary, different forms of distribution expenditure and repression measurements eliminate the risk of two typical sources of political instability incidences in oil countries: rivals in the political system and mass anti-government movements (De Mesquita and Smith, 2009).

2.3.2 Political Factors

The political environment of a country characterised by low level of democracy influences the role of youth bulge on political instability directly and indirectly through its adverse impact on economic environment. Directly, it restricts the ability of youth bulge to gain access to the political environment. The environment enhances instability when is characterized by immature democratic practice, lack of minority presentation and self-governance. In such an environment youth bulge might select violence when they find it difficult to influence the political system, gain access to elite positions or where there are insufficient channels to raise their demands peacefully (Goldstone, 2001). Indirectly, a low level of democracy leads to instability through its adverse impact on economic growth. O'Sullivan et al. (2011) indicate that political exclusiveness (among other factors) contributed to the onset of Arab spring in late 2010 in the MENA region. The authors indicate that the absence of democratic representation is the root cause of the Arab spring. The authors indicate that the absent of checks and balances in the region increased the level of corruption, leading to a negative impact on economic activity and investment decisions made by the private sector. This hindered the sector from playing its important role as an engine of economic growth.

2.3.3 Social Factors

Youth bulge who have achieved a high level of educational attainment enhances instability when expectations raised by education are not rewarded by labor markets and political systems fail to accommodate resultant political awareness. An individual's opportunity cost increases through education because it expands prospective income-earning opportunities. This eliminates an individual's opportunity to commit political instability incidences (Collier, 2000). However, the failure of the labor markets to satisfy an individual's expectation because of imbalance between growth rate in employment opportunities and an increasing number of educated youth leads to instability (Fuller, 2003). The adverse impact of education on political environment is expected to be higher from unemployed youth with tertiary education than unemployed youth without tertiary education. Fuller (2003) argues that the risk of political instability increases when unemployment hits people with tertiary education. This group is more driven to seek white-collar employment, which, if not met, may stir them to commit political instability incidences. This is in contrast to people with less than tertiary education level education, who may willingly accept blue-collar employment. In addition, a high level of educational attainment increases political awareness. The failure of the political system to accommodate such awareness enhances instability as indicated by Huntington, (1968).

The so-called Arab Spring in late 2010 presents anecdotal evidence about the importance of considering contextual environment in the role of youth bulge on instability. Campante, Chor, and Davin (2011) argue that the Arab spring was driven by two structural forces, namely demographic and economic conditions. They indicate that the successful revolution against the Mubarak regime in Egypt (for example) was quickly dubbed as a youth revolution. Shehata (2011) indicates that the region experienced a youth bulge explosion, where more than half of its total population is aged from 15 to 29. Shehata (2011) cites the World Bank that this age group achieved a high level of educational attainment amid low economic growth that failed to create employment opportunities.

2.3.4 Control Variables

In order to ensure that the empirical results of the joint effect are unbiased, empirical models will include several control variables that are found empirically to contribute to political instability.

Rapid population growth rate in rural area increases the level of rural-urban migration with the expectation of better livelihoods. This increases pressure on educational institutions and labour markets and creates shortages. Such shortages and concentration of a high percentage of population in a small geographic area facilitates collective action against a government, especially when youth bulge makes up a high percentage of urban population (Goldstone, 1991). Collective action is seen as a response to the failure of government to accommodate the growing demand for employment and educational opportunities. This depreciates public living standard, which leads to public dissatisfaction that might turn into instability (Turchin, 2013). Ross et al. (2011) point out that rapid urban growth rate creates shortages of employment and contributed partially to the onset of Arab Spring in late 2010 in the MENA region. In contrast, there are some authors like Barro (1992) argues that a high level of urbanization enhances political stability in countries with a low level of economic development because they lack the financial resources to control their entire territories when population is spread over a large geographic area.

Total population is a confounder explanatory variable in the determinants of political instability. It is included in the model to account for the variation in the level of political instability based on the differing size of countries (Urdal, 2006).

Trade openness is a proxy of the economic environment that reflects the level of economic opportunities available for an individual in a country, according to the opportunity perspective. Bricker and Foley (2003) find that a high level of trade openness decreases the level of political instability. They contend that a high level of trade openness increases the economic opportunity available to an individual so that he/she is less likely to commit acts that contribute to political instability. Similarly, Bloom and Canning (2004) argue that a youth bulge can yield demographic dividends when high levels of trade openness (among other factors) are present in a country.

In light of the previous discussion, this chapter will test the independent effect of youth bulge and its interaction with economic growth, unemployment, level of democracy, educational attainment and rents from natural resources on political instability as following hypotheses show. The empirical analysis will include youth unemployment, rents from natural resources, trade openness, GDP annual growth, level of democracy, gross tertiary enrolment, logarithm of total population and urban growth rate as control variables to support the hypotheses, the expected sign of the youth bulge and control variables are shown in the table 2.1.

H_1:*Countries that experience a high percentage of youth bulge are more likely to experience political instability than countries that do not, ceteris paribus.*

H_2: *The higher the economic growth; the lower the impact of youth bulge on instability, ceteris paribus.*

H_3: *The higher the rate of youth unemployment, the stronger the impact of youth bulge on instability, ceteris paribus.*

H_4: *The higher the level of democracy; the lower the impact of youth bulge on instability, ceteris paribus.*

H_5: *The higher the level of educational attainment, the stronger the impact of youth bulge on instability, ceteris paribus.*

H_6: *The higher the rents from natural resources; the lower the impact of youth bulge on instability, ceteris paribus.*

Table 2.1 The Expected Sign of the Independent and Control Variables in Measuring Political Instability

Dependent variables: Political Instability	
Independent Variables	Expected Sign with Political Instability
Percentage of people (both sexes) aged 15-24 to population aged (15) years and older (Yb)	Positive
Yb* GDP growth	Negative
Yb*TYU	Positive
Yb*RT	Negative
Yb*GTE	Positive
Yb*Rents	Negative
Total youth unemployment (TYU)	Positive
Natural resources rents as percentage of GDP (Rents)	Negative
GDP annual growth (GDP growth)	Negative
Logarithm of total population (Log T.pop)	Positive
Level of democracy (RT)	Negative
Trade openness (TO)	Negative
Gross enrolment ratio, tertiary, both sexes (%) (GTE)	Positive
Urban annual growth rate (UGR)	Positive

2.4 Models Specification, Data and Methodology

This section presents the models, data and methodology used to test the proposed hypotheses.

2.4.1 Model Specification: The Independent Effect of Youth Bulge on the level of Political Instability

$$PS_{it} = \beta_0 + \beta_1 (Yb)_{it} + \beta_2 (eco)_{it} + \beta_3 (poli)_{it} + \beta_4 (socio)_{it} + e_{it} \quad (2.1)$$

Where:

PS is political instability

Yb is youth bulge

Eco is economic variables that comprise of rents from natural resources, total youth unemployment, trade openness and economic growth.

Poli is political variables including level of democracy.

Socio is social variables that incorporate logarithms of total population, gross tertiary enrolment and urbanization growth rate.

2.4.2 Model Specification: The Joint Effect of Youth Bulge and other Factors on the Level of Political Instability.

In this model the impact of the joint effect of youth bulge and economic growth, youth unemployment, level of democracy, gross tertiary enrolment and rents from natural resources on instability will be tested.

The first joint effect between youth bulge and GDP annual growth is estimated as follows:

$$PS_{it} = B_0 + \beta_1 (Yb)_{it} + \beta_2\ GDP\ growth_{it} + \beta_3 (GDP\ growth * Yb)_{it} + \beta_4 (eco)_{it} + \beta_5 (poli)_{it} + \beta_6 (socio)_{it} + e_{it} \quad (2.2)$$

The impact of joint effect on the level of political instability is captured by β_3 and the partial effect of youth bulge (GDP growth) on the level of political instability is estimated as follows:

$$dPS_{i,t}/dYb_{i,t} = \beta_1 + \beta_3 GDP\ growth_{it} \quad (2.2a)$$

$$dPS_{i,t}/dGDP\ growth = \beta_2 + \beta_3 Yb_{it} \quad (2.2b)$$

Equation (2.2a) applies if $\beta_3 < 0$ implying that a percentage increase in youth bulge yields greater reduction in the risk of political instability with higher rate of economic growth. Similarly, $\beta_3 < 0\ in$ equation (2.2b) implies that a percentage point increase in economic growth yields greater reduction in the level of political instability with a higher percentage of youth bulge. The interaction effect will be evaluated at mean value of each variable.

The second joint effect between youth bulge and total youth unemployment will replace the previous joint effect in model (2.2). The coefficient of β_3 captures the partial effect of youth bulge (total youth unemployment) on the level of political instability and is estimated as follows:

$$dPS_{i,t}/dYb_{i,t} = \beta_1 + \beta_3 TYU_{it} \quad (2.2c)$$

$$dPS_{i,t}/dTYU_{i,t} = \beta_2 + \beta_3 Yb_{it} \quad (2.2d)$$

This indicates that if $\beta_3 > 0$ in equation (2.2c), a percentage increase in youth bulge produces a stronger impact on the level of political instability with higher rate of youth unemployment. Similarly, if $\beta_3 > 0$ in equation (2.2d), one percentage increase

in total youth unemployment produces a stronger impact on the level of political instability with higher percentage of youth bulge. The effect of total youth unemployment and youth bulge on the level of political instability will be evaluated at the mean value of each variable.

The third joint effect between youth bulge and level of democracy will replace the previous joint effect in model (2.2). The partial effect of youth bulge (level of democracy) on the level of political instability, captured as β_3 is computed as follows:

$$dPS_{i,t}/dYb_{i,t} = \beta_1 + \beta_3 RT_{it} \quad (2.2e)$$

$$dPS_{i,t}/dRT_{i,t} = \beta_2 + \beta_3 Yb_{it} \quad (2.2f)$$

In equation (2.2e) if $\beta_3 < 0$ then one percentage increase in youth bulge yield greater reduction in the risk of political instability with higher level of democracy. Similarly, in equation (2.2f) if $\beta_3 < 0$ then one percentage increases in the level of democracy yield greater reduction in the risk of political instability with higher percentage of youth bulge. The partial effect will be evaluated at the mean value of each variable.

The fourth joint effect between youth bulge and gross tertiary enrolment will replace the previous joint effect in the model (2.2). The partial effect of youth bulge (gross tertiary enrolment) on the level of political instability captured as β_3 is computed as follows:

$$dPS_{i,t}/dYb_{i,t} = \beta_1 + \beta_3 GTE_{it} \quad (2.2g)$$

$$dPS_{i,t}/dGTE_{i,t} = \beta_2 + \beta_3 Yb_{it} \quad (2.2h)$$

In equation (2.2g) if $\beta_3 > 0$ then one percentage increase in youth bulge produces a stronger impact on the level of political instability with higher gross tertiary enrolment. Similarly, in equation (2.2h) if $\beta_3 > 0$ then one percentage increase in gross tertiary enrolment produce a stronger impact on the level of political instability with higher percentage of youth bulge. The partial effect of each variable is estimated at their mean value.

The fifth joint effect between youth bulge and rents from natural resources will replace the previous joint effect in the model (2.2). The partial effect of youth bulge

(rents from natural resources) on the level of political instability captured as β_3 is computed as follows:

$$dPS_{i,t}/dYb_{i,t} = \beta_1 + \beta_3 Rents_{it} \quad (2.2i)$$

$$dPS_{i,t}/dRents_{i,t} = \beta_2 + \beta_3 Yb_{it} \quad (2.2j)$$

In equation (2.2i) if $\beta_3 < 0$ then one percentage increase in youth bulge yield greater reduction in the risk of political instability with higher rents from natural resources. Similarly, in equation (2.2j) if $\beta_3 < 0$ then one percentage increases in rents from natural resources yield greater reduction in the risk of political instability with higher percentage of youth bulge. The partial effect of each variable is estimated at their mean value.

2.4.3 Data Description

The data set used in this research is unbalanced panel data that includes 139 countries from 1984 to 2013[11].

2.4.3.1 Political Instability Measurement

This study uses a new data set that to best of my knowledge has not been used before to capture the role of youth bulge on political instability. The definition follow other impirical research that measure political instability in form of social political unrest. The study used the International Country Guide Risk (ICGR) data set published by the Political Risk Service Group (PRS), a commercial country risk provider. Its annual report measures the financial, political and economic risk of countries worldwide from 1984 to 2013. It is constructed to assess political risk associated with politics and socioeconomic environment in a country (Lambsdorff, 2007). This data set has several advantages; first, it meets the objectives of this chapter that aims to examine factors contributing to the role of youth on political instability. It covers a significant time period in comparison to other data sets that measure the level of political instability in the form of small and large-scale incidences, such as Conflict Barometer, which covers a period from 1992 to 2013 (some of which are published in German language).

This study will measure the level of political instability by aggregating a total score of internal conflict and government instability in the ICGR data set. Government instability is an assessment of a government's ability to achieve its declared program

[11] The full list of countries in listed in the appendix.

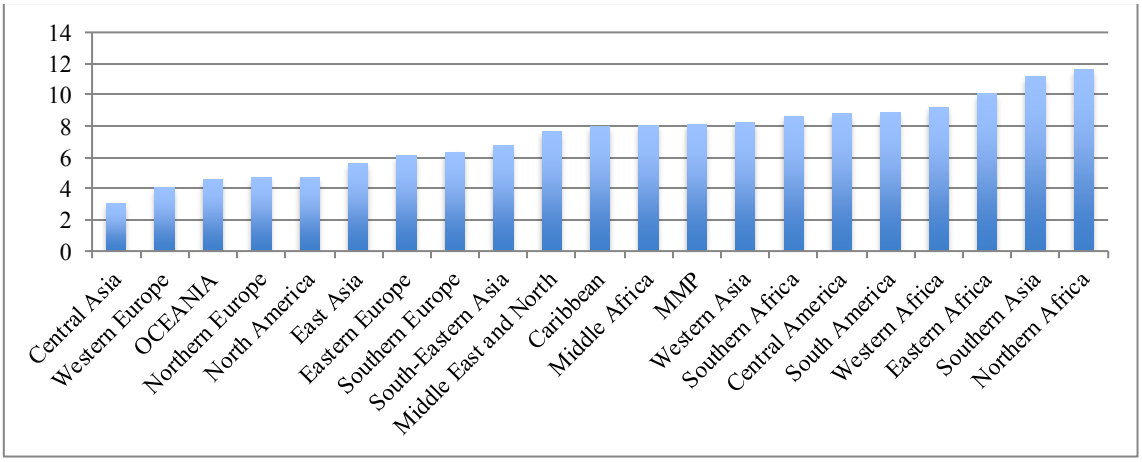
and to stay in office. It is measured in a scale of 12 as a sum of three subcomponents: government unity, legislative strength and popular support (the breakdown of the score is not given). Internal conflict is divided equally into three components: civil war/coup threat, terrorism/political violence and civil disorder (however, the breakdown of the score is not given). According to ICGR, a high score suggests that a country has enjoyed a low level of political instability, while a low score indicates that a country faces a high risk of instability[12]. In this study, for ease of interpretation, the original score is rescaled so that a high score suggests a high level of instability and a low score shows a low level of instability.

Sensitive analysis will be carried out using an index of political instability constructed by Saha and Yap (2013) using the ICRG data set. This index is the average of six components included in the political risk data set. These components are: internal conflicts (IC), government stability (GS), religion in politics (RP), external conflict (EC), ethics tension (ET) and military in politics (MP). Saha and Yap (2013) argue that these components are most likely to predict the level of political instability in a country. This study excludes external risk because the objective of this study is to investigate the impact of youth bulges through their interaction with economic and political factors on the level of domestic political instability, not external risk. External risk is driven by factors other than a high percentage of young people, such as geopolitical interests or border conflicts. The original score is rescaled so that a high score suggests a high level of instability and a low score shows a low level of instability.

Figure 2.2 shows the mean score value of political instability across different regions of the world[13]. The graph shows that Northern Africa has the highest risk of political instability whereas central Asia, Western Europe and Oceania have the lowest levels of political instability.

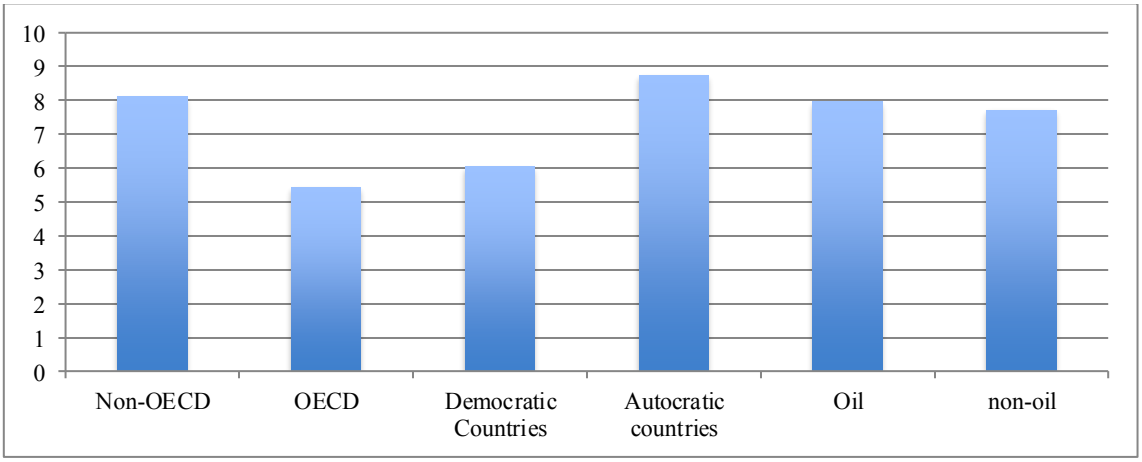
[12] For more details see www.prsgroup.com/ICRG_Methodology.aspx.
[13] All graphs in this chapter are based on the average value of a variable over the sample period unless otherwise stated.

Figure 2.2 The Level of Political Instability Across the World



The level of political instability across countries is grouped based on countries' level of democracy[14], OECD countries and the percentage of oil export to total export[15] as shown in Figure 2.3. This Figure shows that OECD countries enjoy the highest levels of stability across all classifications. Democratic countries enjoy higher levels of stability than their autocratic counterparts. The level of instability shows no significant variation between oil countries and their non-oil counterparts.

Figure 2.3 The Level of Political Instability Under Different Contexts



2.4.3.2 Independent Variables

In the following sub-sections the data source and the definition use to measure youth bulge and independent variables are presented.

[14] Freedom House data set is used to group countries into democratic and autocratic countries. Countries classified 'free' in the data set are considered democratic and take the value of 1; otherwise they are considered 'autocratic' and take the value of 0.

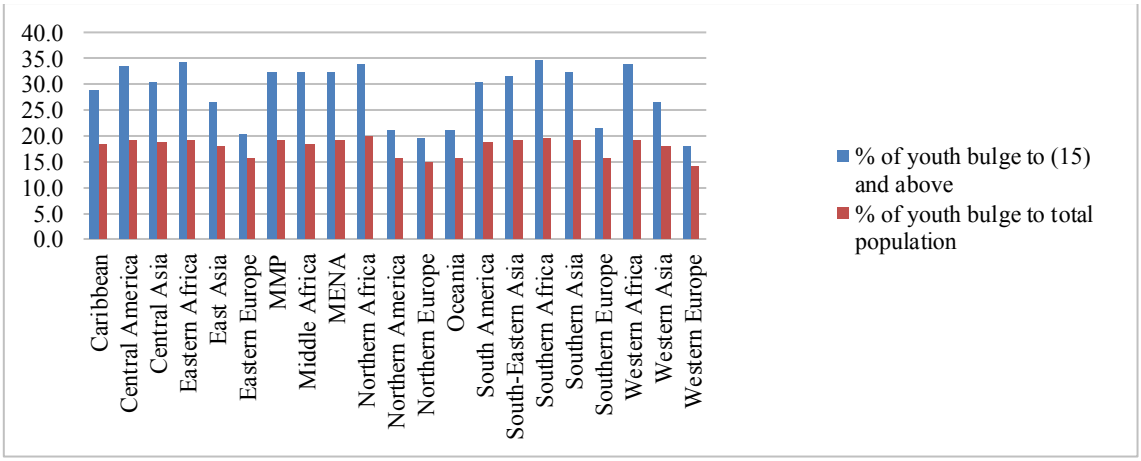
[15] A country is considered oil dependent when oil export constitutes one third of exports, taking the value of of 1 and 0 otherwise. The measure is adopted from Taydas and Peksen (2012).

2.4.3.2.1 Youth Bulge

There is no general agreement in the definition of youth bulge or the percentage of youth bulge that increases the risk of political instability. The literature measures youth bulge in two ways: as a percentage of population aged 15-24 years to total population or as percentage to population aged 15 and older. The first definition is adopted by Huntington, 1996, Goldstone 2001, and Collier and Hoeffler 2004; however, Urdal (2006) argues that the first proxy fails to capture the impact of youth bulge on political instability because theories regarding the role of youth bulge on violence assume that competition between the young and old generation lead to political instability. Urdal (2006) indicates that the first definition underestimates the impact of youth bulge on instability in countries that continue to experience high levels of fertility because the youth bulge indicator is deflated by the existence of a large percentage of youth under the age of 15. Urdal (2006) argues that the second definition is more appropriate to capture the role of youth bulge on instability. In this study the second definition will be used. There is no agreement in the literature about the percentage of youth bulge among population that increases the risk of political instability; however, Huntington (1996) suggests when the percentage of youth bulge aged 15-24 years old to total population exceeds 20%.

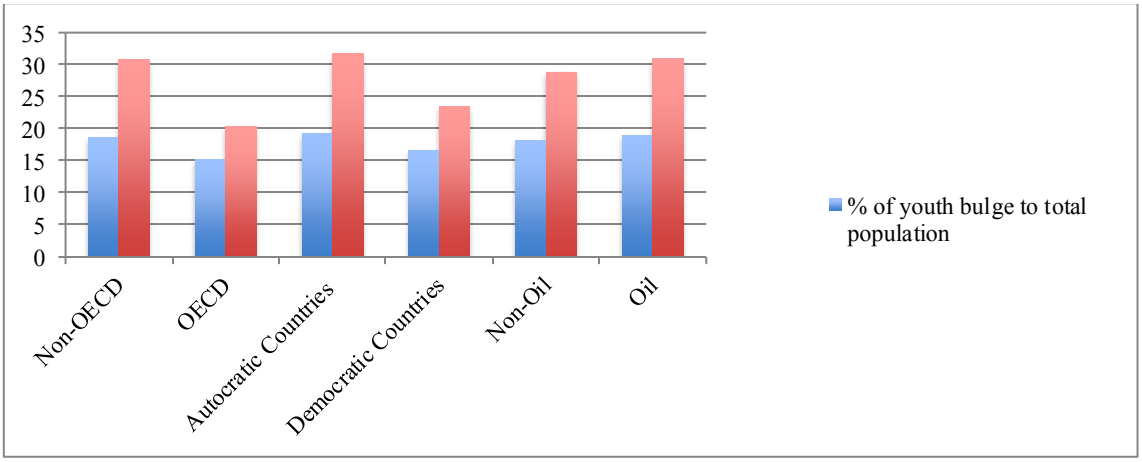
Comparing the two proxies of youth bulge across world regions (as shown in Figure 2.4) indicates that there is no significant variation in the percentage of youth bulge using the first proxy; however, there is a significant difference in the percentage under the second proxy, which supports Urdal (2006) and the choice of proxy used in this study. Furthermore, under the first definition, MENA region do not have a higher percentage of youth bulge compared to other regions in the world. This is in stark contrast to views that partially attributed the so-called Arab spring in late 2010 to a high percentage of youth bulge. Under the second definition, the percentage in the region is among the highest in the world.

Figure 2.4 Youth Bulge Percentage Across the World



There is a significant difference in the percentage of youth bulge under the second definition when countries are grouped based on their level of democracy and membership in the OECD; but there is only a small difference between oil and non-oil countries as illustrated in Figure 2.5. Data on youth bulge is collected from the United Nations, The World Population Prospects: the 2012 revision.

Figure 2.5 Youth Bulge Percentage Under Different Contexts



2.4.3.2.2 Economic Growth

Economic growth is the annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2005 U.S Dollar data collected from the World Development Indicators. Figure 2.6 shows GDP annual growth across the world. East Asia registers the highest average annual growth over the sample period. The lowest annual growth (less than 3%) is registered in Western and

Eastern Europe[16]. The MENA region is considered among the top five-regions in terms of performance in annual economic growth, with average annual growth 5.15%. This is in contrast to the view that poor economic performance (among other factors) caused the Arab Spring in 2010.

Figure 2.6 Economic Growth Across the World

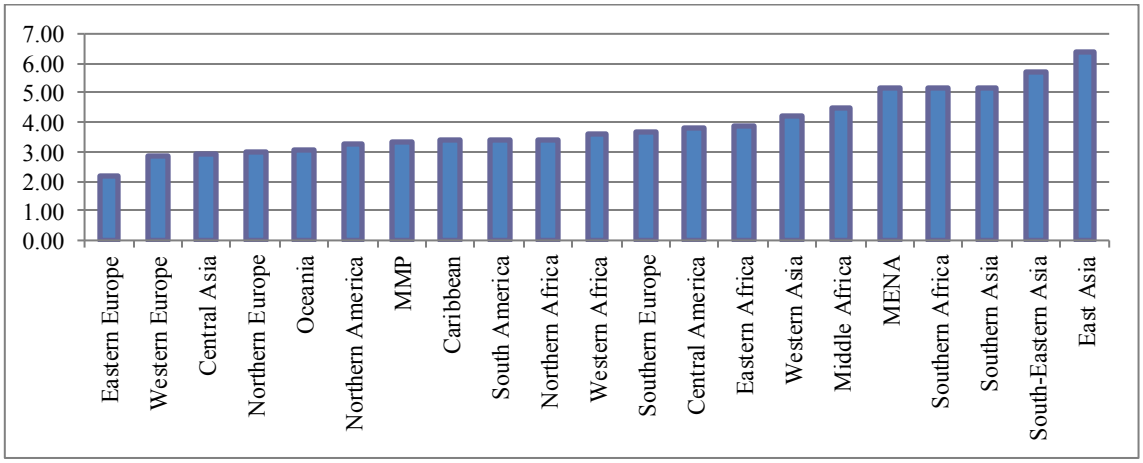
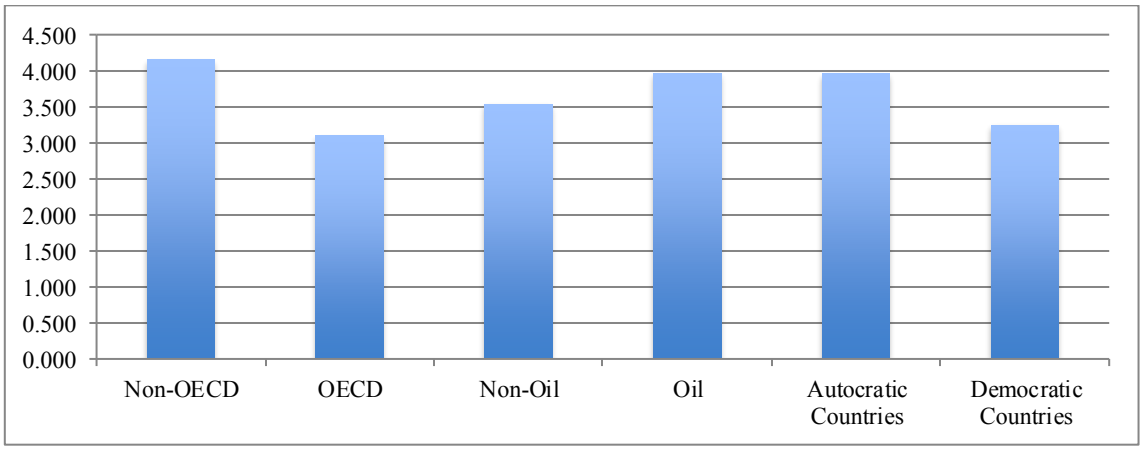


Figure 2.7 shows economic growth in different contexts, revealing that there is no significant difference between OECD countries, oil countries and democratic countries in comparison with non-OECD, non-oil countries and autocratic countries.

Figure 2.7 Economic Growth Under Different Contexts



2.4.3.2.3 Trade Openness

Trade openness is the percentage of imports and exports to GDP data collected from the World Development Indicators. Figure 2.8 shows the level of trade openness across the world, showing that Western Europe, Northern America, MENA and Oceania

[16] Descriptive statistics are contained in the Appendix.

are the most integrated regions, with international markets for their imports and exports to GDP reaching 107%, 103%, 98% and 90% respectively. The level of trade openness in most other regions is around 70%. Figure 2.9 shows the level of trade openness across different contexts; OECD countries are ranked first across all groups followed directly by oil countries while autocratic countries have the lowest level of trade openness across different contexts.

Figure 2.8 Trade Openness Across the World

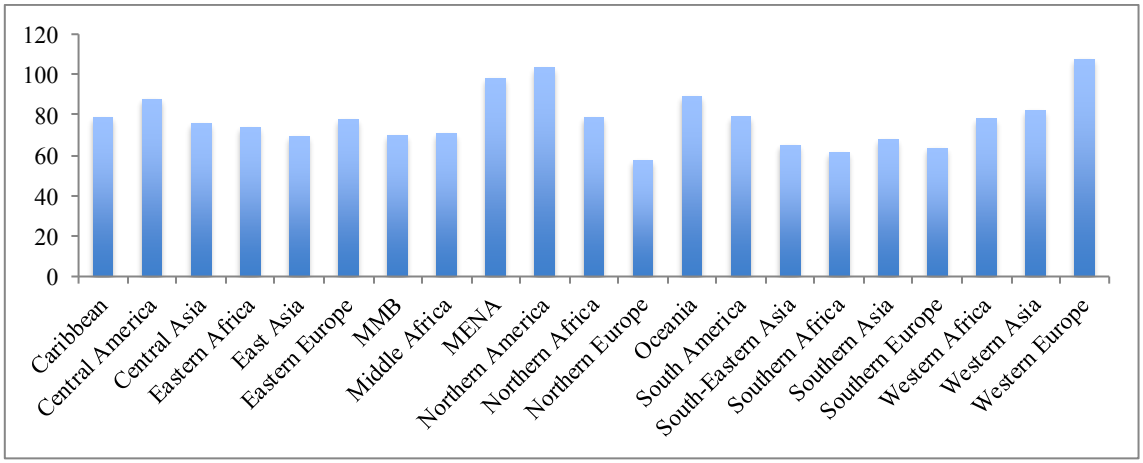
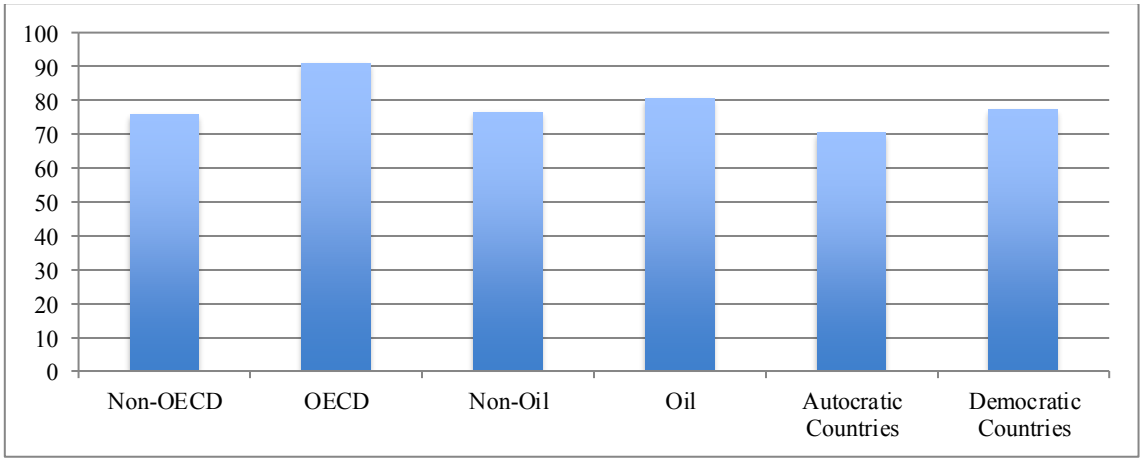


Figure 2.9 Trade Openness Under Different Contexts



2.4.3.2.4 Natural Resources Rents

Natural resources rents is the percentage of rents generated from oil, gas and forests to GDP, data collected from World Development Indicators Figure 2.10 shows the importance of natural resources as a percentage of GDP across the world. The highest percentage recorded is in Middle Africa and MENA where it makes up 26% and 25% to GDP respectively; whereas, it constitutes only 5% and less in East Asia, Eastern

Europe, Northern Africa, Northern America, Northern Europe, Oceania, Southern Africa, Southern Europe and Western Europe. Figure 2.11 shows the contribution of rents from natural resources to GDP under different contexts. Rents contribute more than 30% to GDP in countries classified as oil countries, while in OECD and democratic countries its contribution is negligent.

Figure 2.10 the Percentage of Rent from Natural Resources to GDP

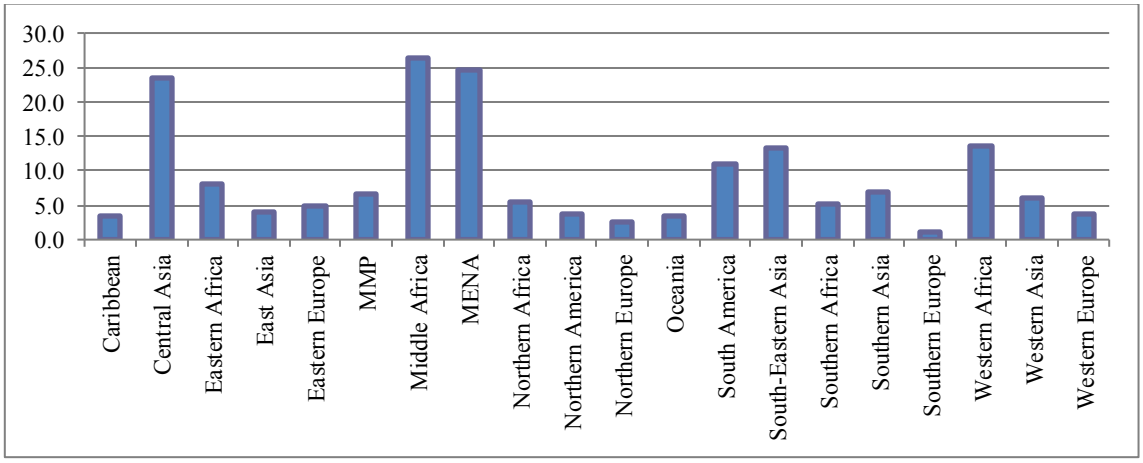
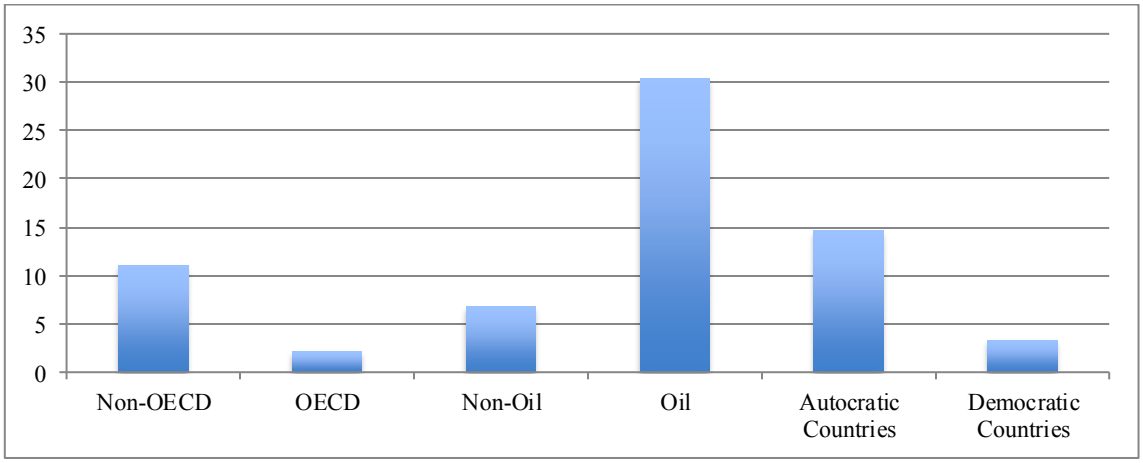


Figure 2.11 the Percentage of Rent from Natural Resources to GDP Under Different Contexts



2.4.3.2.5 Unemployment

Unemployment influences the role of youth bulge on political instability according to the opportunity perspective. In this study, unemployment is measured by total youth unemployment in age bracket 15-24 to total labour force in age bracket 15-24. This proxy is selected over other proxies of unemployment (such as total unemployment to total labour force) because one objective of the study is to identify the impact of unemployment among youth bulge on instability. Data is collected from the

World Development Indicators and the proxy is transferred to logarithm. Figure 2.12 shows the youth unemployment rate across the world, revealing significant variation across regions. Four regions experience a significantly higher youth unemployment rate in comparison with other regions. These regions are the Caribbean, Middle Africa, MENA and Southern Europe, where youth unemployment rate reaches 28%, 41%, 23% and 28% respectively. Figure 2.13 shows youth unemployment rate across different contexts; it does not reveal significant variation across OECD vs. non-OECD, oil vs. non-oil and democratic vs. autocratic countries.

Figure 2.12 Unemployment Rate Across the World

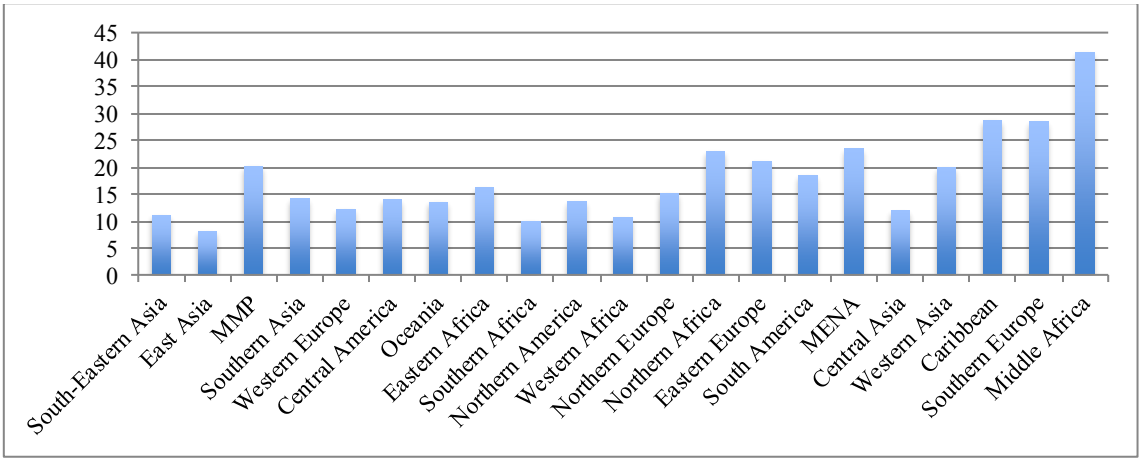
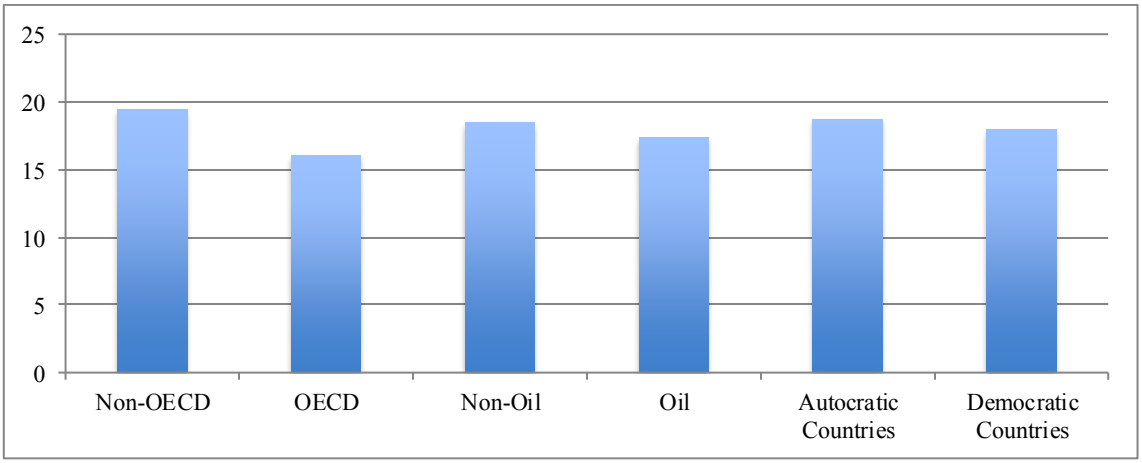


Figure 2.13 Unemployment Rate Under Different Contexts



2.4.3.2.6 Level of Democracy

Democratic level data is collected from the Polity IV project that ranks countries on a scale of 21, from -10 (hereditary monarchy) to 10 (consolidated democracy). In this research the score is re-scaled from 1 to 21 where 1 indicates an autocratic regime and 21 indicate a fully democratic regime. Figure 2.14 shows the level of democracy

across the world. MENA region is the most autocratic regime in the world (as claimed by many commentators and media reports). Similarly, all regions in Africa are autocratic at different levels, while Oceania and Northern America are the most democratic regions in the world. Figure 2.15 shows the score of democracy across different contexts; it shows that the variation between the level of democracy is higher by almost double in OECD countries vs. non-OECD countries, and similarly in non-oil countries vs. oil countries and democratic vs. autocratic countries[17].

Figure 2.14 Level of Democracy Across the World

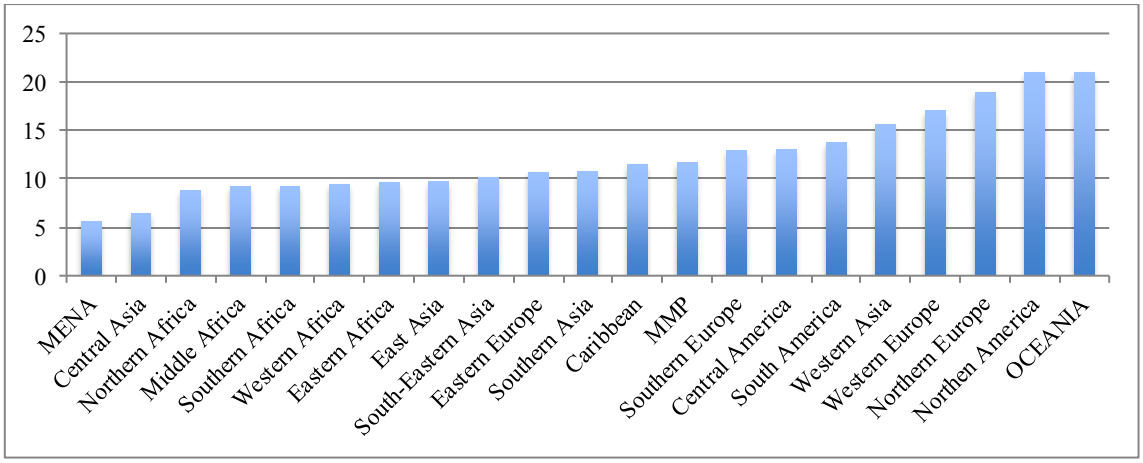
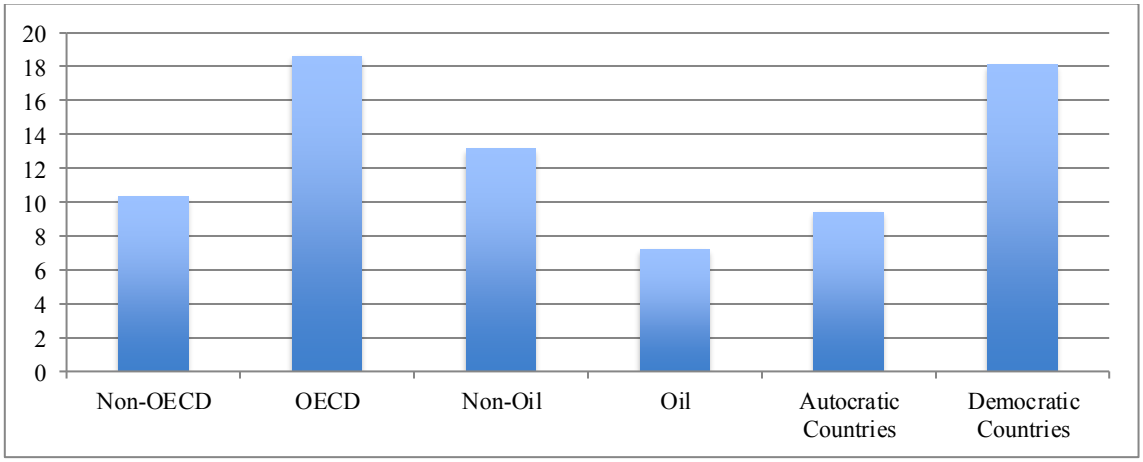


Figure 2.15 Level of Democracy Under Different Contexts



2.4.3.2.7 Social Factors

Total population is log transformed and data is collected from The World Population Prospects: the 2012 revision (UN, 2014). Figure 2.16 shows the log of total population across different world regions. In general, the average growth rate of

[17] 'Free' countries in the Freedom house data set are considered democratic in this research and are otherwise considered autocratic countries. Figure 2.15 use the previous mentioned dummy to show the score of democracy according to the Polity IV project in democratic and autocratic countries.

population is similar except for the Northern America region. Similarly, it shows no significant variation (as shown in Figure 2.17) when countries are grouped into OECD vs. non-OECD, oil vs. non-oil and democratic vs. autocratic countries. Although there is no significant difference it is possible that in some regions or groups the population growth rate does not reach the required replacement rate to increase the effect of total population on instability.

Figure 2.16 Log of Total Population Across the World

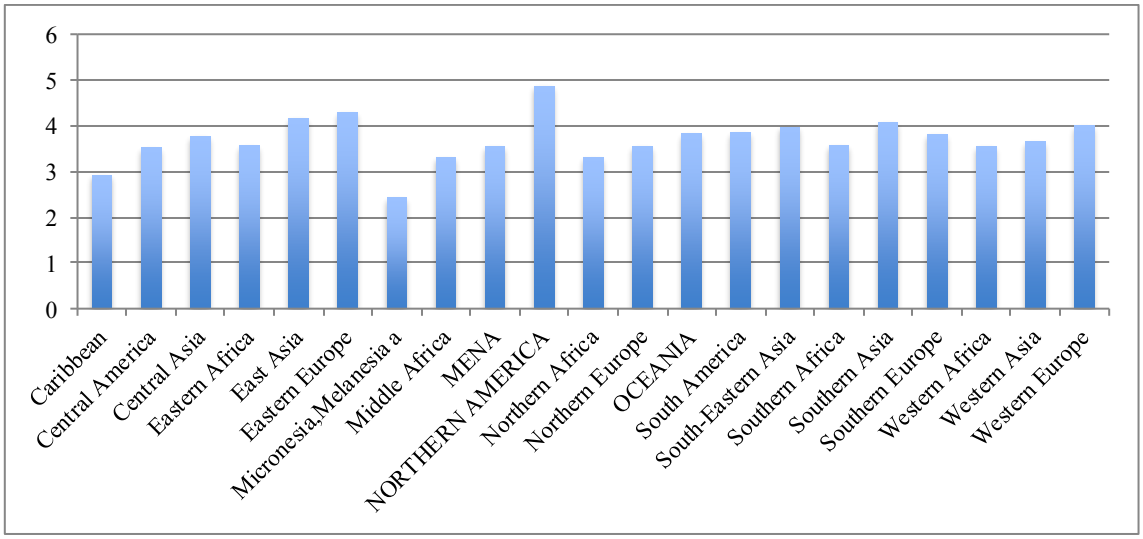
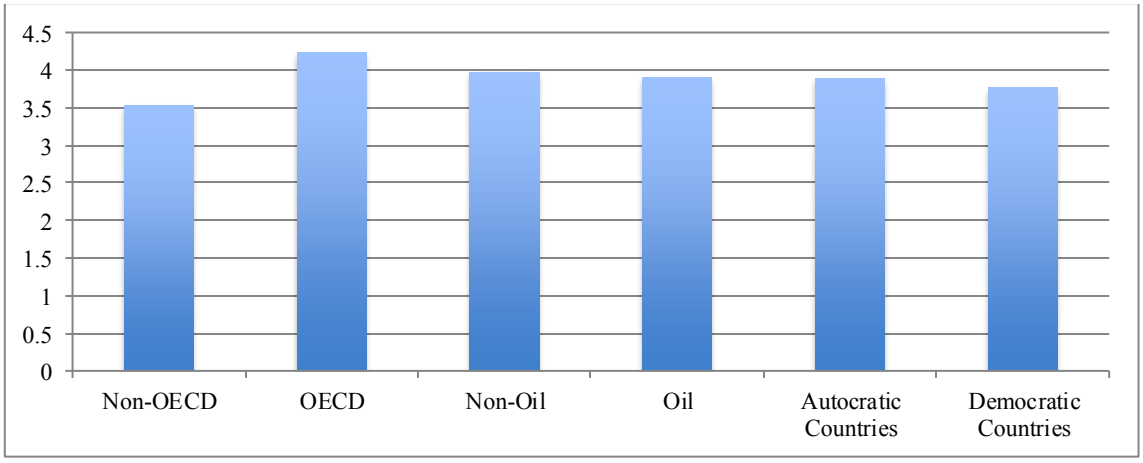


Figure 2.17 Log of Total Population Under Different Contexts



2.4.3.2.8 Urbanization

Urbanization growth rate is annual growth rate in urbanized population and data is collected from the World Development Indicators. Figure 2.18 shows urbanization growth rate across the world, with all regions experiencing an urbanization growth rate between 2% and 3% a year except Northern America, East Asia and Southern Asia

where urbanization growth rate exceeds 4%. Figure 2.19 shows the rate of urbanization growth in OECD, oil, and democratic countries and shows that oil countries have the highest urbanization growth rate across all groups.

Figure 2.18 Urbanization Growth Rate Across the World

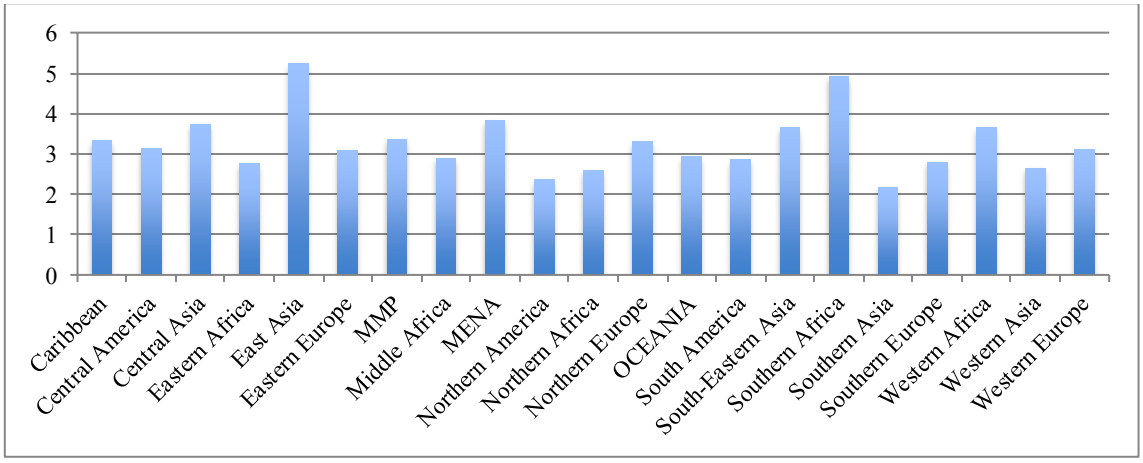
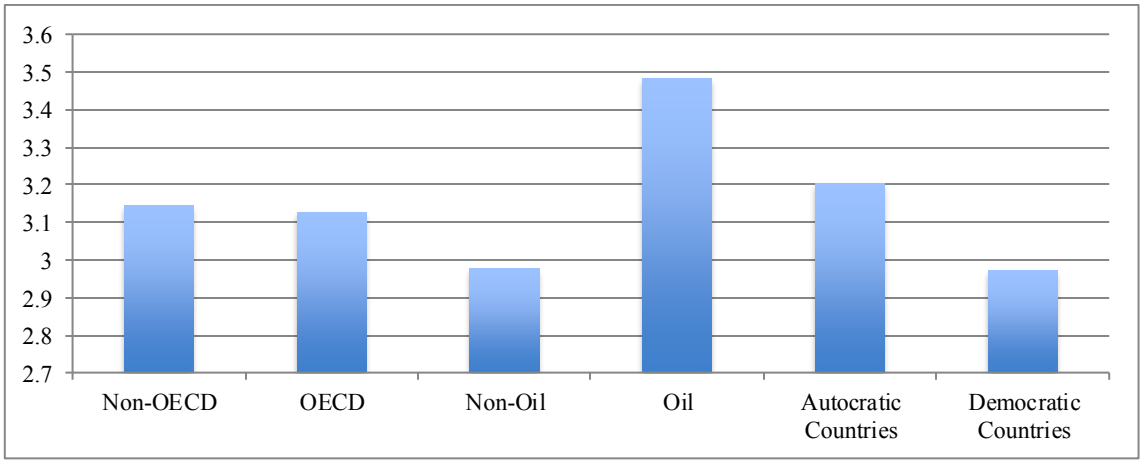


Figure 2.19 Urbanization Growth Rate Under Different Contexts



2.4.3.2.9 Tertiary enrolment

Gross tertiary enrollment is total enrollment in tertiary education as a percentage of the eligible official school in age group of population corresponding to the same level of education in a given school year (UNESCO, 2009). Figure 2.20 shows gross educational attainment across region, with Northern America region showing the highest educational attainment to total population at around 70% of the same age group[18]. The percentages vary across regions from as low as less than 3% in eastern and western Africa to as high as 49% in Oceania. Educational attainment in the MENA

[18] Descriptive statistics are included into Appendix.

region constitutes almost 15% of the population, which is lower than the World average by 7%.

Figure 2.20 Gross Educational Attainment Across the World

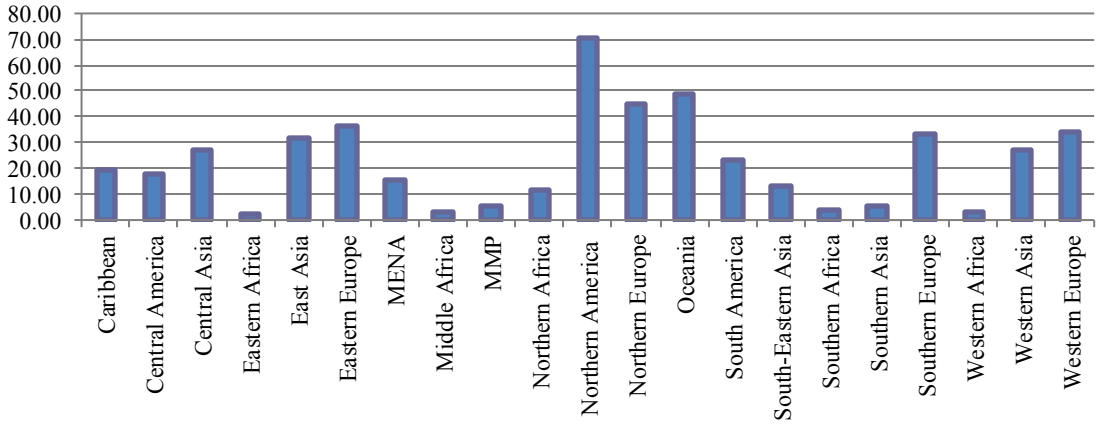
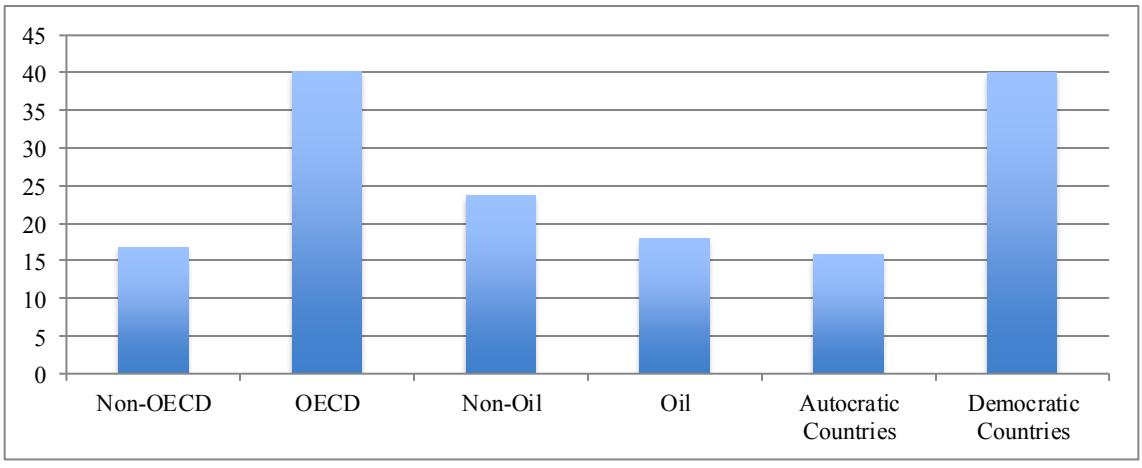


Figure 2.21 shows gross tertiary enrolment in OECD, oil and democratic countries. OECD and democratic countries have higher educational attainment than non-OECD and autocratic countries respectively. Similarly, non-oil countries have higher educational attainment than oil countries.

Figure 2.21 Gross Educational Attainment Under Different Contexts

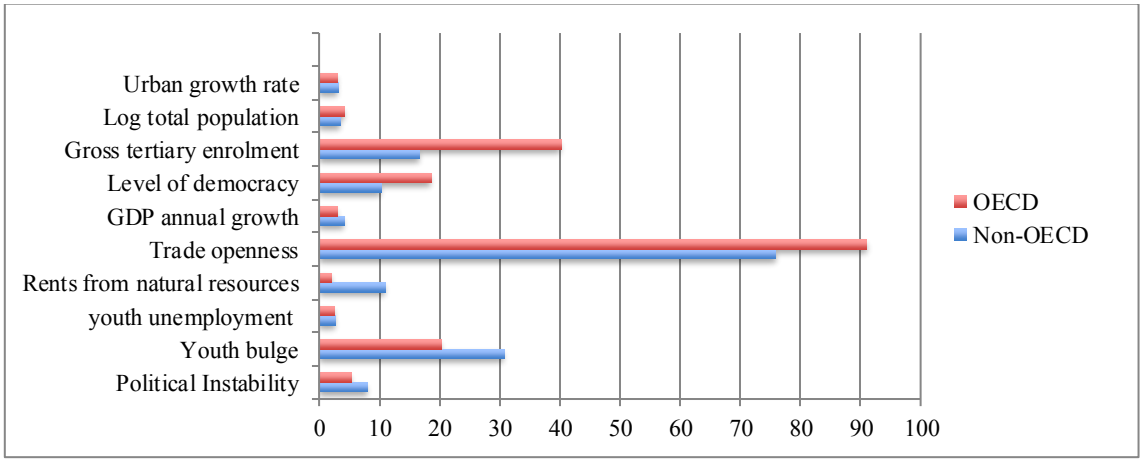


2.5 Estimation Strategy

Unlike past empirical research, in this study countries are distinguished according to the percentage of youth bulge in age bracket 15-24 years old to population in age bracket 15 years old and above and according to the source of government revenue. The first dummy variable is for OECD countries. The average percentage of

youth bulge over the sample period is 20% in OECD countries while in non-OECD countries it is 31%. Furthermore, variables moderating the role of youth bulge on political instability proposed by the hypotheses of this study show significant differences as shown in Figure 2.22.

Figure 2.22 The Performance of Dependent and Independent Variables in OECD and Non-OECD countries



The study creates dummy variables for democratic countries. The dummy is created using Freedom House political and civil liberties data in order to capture the variation in the impact of youth bulge on political instability in democratic countries and autocratic countries. The data set classifies countries according to their level of democracy into free, partly free and not free. In this research a country classified as free in the data set is considered democratic and takes the value of 1, otherwise 0 and is considered as autocratic. The percentage of youth bulge is 32% in autocratic countries while it is only 23% in democratic countries (as Figure 2.23 shows). The difference in the factors moderating the role of youth bulge on political instability is clear in gross tertiary enrolment and rents from natural resources. However, the difference in unemployment and GDP annual growth is insignificant.

This study also creates a dummy variable for oil countries to examine the variation of the role of youth bulge on political instability between countries that rely on tax and non-tax revenue. A country is considered oil dependent when oil export constitute one third of export, taking the value of 1 and 0 otherwise. This measure is adopted from Taydas and Peksen (2012). Oil countries have easy access to oil revenues unlike non-oil countries that need to increase the level of taxation in order to respond to sudden needs raised by some segments of society like youth bulge. This study considers

rents from oil distinct from other natural resources because Morrison (2009) finds that non-tax revenues are in general associated with less taxation on the elite in democracies and a high level of public spending in autocratic countries that in both contexts enhances stability. Figure 2.24 shows the percentage of youth bulge and factors moderating their role on instability in oil and non-oil countries. There is variation in the level of democracy and gross tertiary enrolment while the differences in other factors are marginal.

Figure 2.23 The Performance of Dependent and Independent Variables in Democratic and Autocratic countries

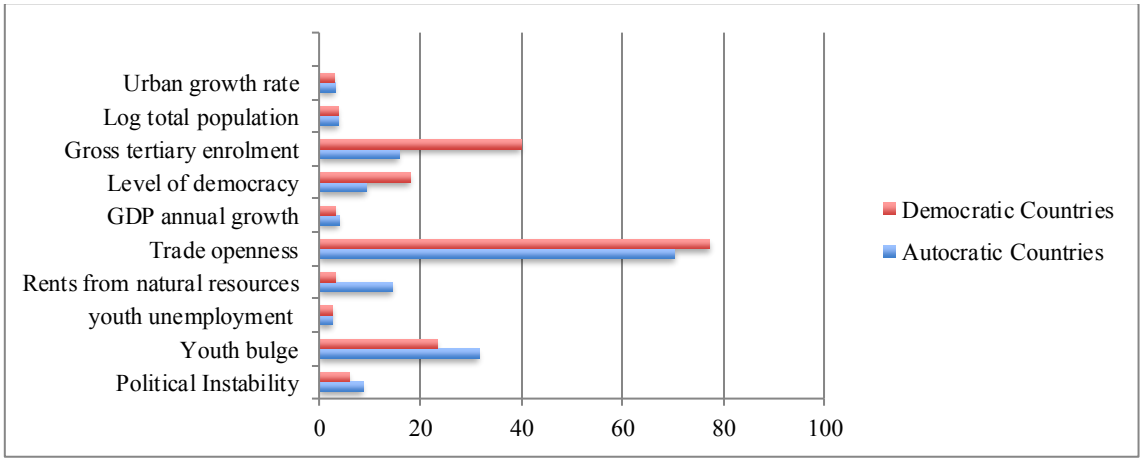
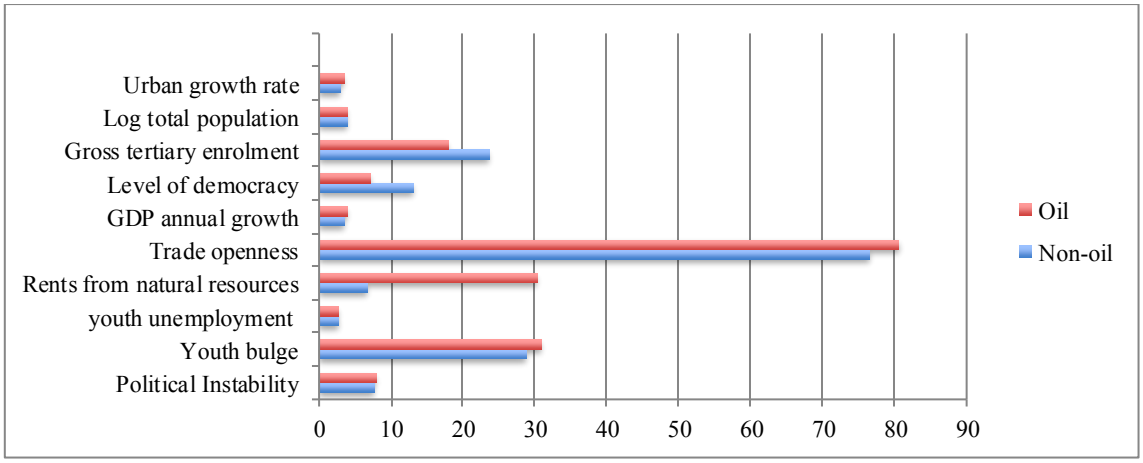


Figure 2.24 The Performance of Dependent and Independent Variables in Oil and Non-Oil countries



The final dummy is created to capture the impact of youth bulge on instability in the MENA region. In the aftermath of the onset of the so called Arab Spring in late 2010, the region received significant attention by policy makers, international organizations and researchers driven to understand factors causing youth bulge to commit instability incidences in the region. This study will examine the independent

effect of youth bulge and their joint effect moderated by other factors on instability in the region.

These dummies are created to capture the role of youth bulge on political instability in different contexts instead of carrying out empirical analysis of each group of countries. However, it does not rule out the possibility that there is variation in the percentage of youth bulge and socioeconomic and political variables across countries under each group. Data availability restricted further classification of countries under each group based on youth bulge and other economic and political variables.

The existing literature remains inconclusive about the determinants of political instability (Miljkovic and Rimal, 2008). Following Collier and Hoeffler (2002), this study examines the determinants of political instability focusing on youth bulge and various political economic and social factors.

Estimation will begin by examining the role of the independent effect of youth bulge on instability in panel data analysis, OECD countries, oil countries, democratic countries and the MENA region. Moreover, the joint effect of youth bulge and other political and socioeconomic factors on political instability will be examined one by one.

This study will estimate the empirical models using 2SLS to account for a possible endogeneity issue, which is not addressed previously by empirical research. The unaddressed endogeneity issue raises doubt on causal relationships that run from independent to dependent variable as indicated by Miguel, Satyanath, and Sergenti (2004). Furthermore, it leads to inconsistent and biased estimates of the regression coefficient(Gujarati, 2014). Using 2SLS has other advantages. First, the significance test in large sample sizes does not depend on normality (Bollen and Stine, 1992). Second, its estimators are less sensitive to model misspecification. Cragg (1968) tests the impact of incorrect exclusion of some variables from the empirical model and finds estimators are affected slightly by ignoring unimportant variables and omitting structural equation. Similarly, Bollen and Stine (1992) suggest using it when there is suspicion of omitted path and other incorrect structure. In this chapter, statistical tests show that GDP annual growth is endogenous; the issue is addressed by using a one-year lag of economic growth as an instrument due to the difficulty of finding an appropriate external instrument. The statistical test confirms the validity of the instrument for GDP

annual growth[19]. One instrument is used because estimators are more robust with fewer instruments than many instruments as found empirically by Bollen and Stine (1992).

An alternative measure of political instability is used to carry out sensitivity analysis. It is adopted from Saha and Yap (2013). The index is constructed by taking the average of six components included in the political risk data set. The components are internal conflicts (IC), government stability (GS), religion in politics (RP), external conflict (EC), ethics tension (ET), and military in politics (MP). According to the authors, these components can predict the level of political instability in a country. This study excludes external risk because the objective of this study is to investigate the impact of youth bulges through the interaction with economic and political factors on the level of domestic political instability, not external risk. External risk is driven by factors other than a high percentage of young people, such as geo-political interests or border conflicts. The original score is rescaled so that a high score suggests a high level of instability while a low score shows a low level of instability. The alternative measure aims to check the robustness of the results to a change in political instability definition because the alternative measure includes several uncommon forms of political instability, such as religion in politics and military in politics which can be noted in countries like Iran and Egypt, respectively.

An alternative estimation technique is used to carry out sensitivity analysis, which is fixed effect (period effect). The technique considers heterogeneity that may exist among cross section units individually (Gujarati, 2014). Period effect is considered rather than two ways fixed effect or cross section effect because unit effect is considered by using dummy variables. Furthermore, it is selected over cross section effect because independent variables are time variant not invariant. It is chosen rather than random effect to account for possible correlation between independent variables and omitted variables. Saha, Su, and Campbell (2016) indicate that fixed effect absorbs the correlation between independent variables and omitted variables as long as they are time invariant.

This research uses heteroskedasticity and autocorrelation-consistent standard error to reduce the effect of heteroskedasticity on the empirical results. This method does not assume homoscedasticity and it does not require knowledge about, or functional form of, heteroskedasticity like weighted least squares. Furthermore, it does

[19] Endogeneity test and the validity of of year lag of GDP economic growth are given in appendix D table D2.1

not need to go through arbitrary transformation of independent variable or computer stimulation as indicated by Hayes and Cai (2007). This method addresses the effect of autocorrelation on t-statistics and p-value without needing to go through trial and error methods (Gujarati, 2014).

2.6 Estimation Results of the Independent Effect of Youth Bulge on Political Instability: Linear Models

The impact of the independent effect of youth bulge on political instability is estimated in panel data analysis, OECD countries, oil countries, democratic countries and the MENA region as shown in Table 2.2.

Model 1 is estimated by including youth bulge without control variables. The independent effect of youth bulge has a positive sign and significant coefficient at the 1% level. It suggests that increasing the percentage of youth bulge in a country enhances political instability. Using Egypt as an illustrative example, a standard deviation increase in the percentage of youth bulge enhances political instability by 0.218 units or 9% of a standard deviation of political instability.

In Model 2 other determinants of political instability are included alongside youth bulge. The independent effect of youth bulge enhances political instability and has a significant positive coefficient at the 1% level. Its coefficient slightly decreases and the adjusted R-square improves slightly from 22% to 28%. The MENA region has one of the highest percentages of youth bulge worldwide, facing risk of political instability by 0.959 units or 5% of one standard deviation of political instability for each one standard deviation increase in youth bulge[20]. The results suggest that despite of a positive coefficient of youth bulge, political instability is on decline as the constant has strong and negative coefficient.

In model 2 the independent effect of economic growth has a negative sign and significant coefficient at the 1% level, implying that poor economic growth enhances political instability. It constitutes political risk through low employment opportunities and economic benefits. Furthermore, a reduction in tax revenues resulting from sluggish economic growth hinders government expenditure on public goods and services that in turn enhances political instability. The adverse effect of poor economic growth on political stability can be estimated in case of Sudan, where one standard deviation

[20] The independent coefficient of youth bulge *(4.382) its standard deviation in MENA = 0.959 unit, or 5% = (0.219*100)/ (4.366) (standard deviation of political instability in MENA).

decrease in economic growth enhances political instability by 1.942 units or 6% of one standard deviation of political instability[21].

Model 2 shows that trade openness has a negative sign and significant coefficient at the 1% level, albeit it is weak in comparison to economic growth; suggesting that a high level of trade openness has a dumping effect on political instability. A standard deviation increase in trade openness in Sudan lowers political instability by 0.026 units or 0.057% of a standard deviation of political instability[22]. The independent effect of youth unemployment has a positive sign and significant coefficient at the 5% level, showing that political instability rises with an increasing unemployment rate. For example, Colombia could enhance its stability (its average score over the sample period is 11.2) to the average score of the entire sample 7.589 by decreasing its average youth unemployment by 775%[23]. Rents from natural resources have a negative sign and significant coefficient at the 1% level, suggesting that increasing oil rents enhances political stability. It might be that rents from natural resources offer a country with instruments to improve poor performance in economic opportunities in line with projection made by rentier state theory. Alternatively, it might be that oil rents are used to enforce stability through expenditure on repression measurements.

Model 2 shows that the independent effect of democracy has a negative sign although it is not significant, suggesting that an improvement in the level of democracy lowers political instability. It offers channels to raise demands peacefully and settle disputes politically. For example, Cameroun can reduce its average score of political instability from 4 to 3 by increasing its current level of democracy by 42%[24]. The independent effect of gross tertiary enrolment has a negative sign but is not significant, suggesting that decreasing tertiary enrolment enhances political instability. The log of total population has a positive sign and is significant at the 1% level, suggesting that increasing population enhances political instability. It might be that the growth rate in the population exceeds the growth rate in the economic environment. The independent effect of urban growth rate has a positive sign although is not significant, suggesting

[21] The independent coefficient of GDP annual growth *(5.922) (its standard deviation in Sudan) = 1.942 unit Or 6% = (-0.328*100)/ (5.225) (the standard deviation of political instability in Sudan).
[22] The independent coefficient of trade openness *(8.751) (its standard deviation in Sudan) = 0.026 unit Or 0.057% = (-0.003*100)/ (5.225) (the standard deviation of political instability in Sudan).
[23] The average score of instability in Colombia (11.2-7.589/0.466)(coefficient of youth unemployment)*100=774%.
[24] The average score of instability in Cameroun (4-3/0.027)(coefficient of level of democracy)=42%.

that rapid urban growth rate enhances political instability, indicative of a government failing to meet different needs and requirements associated with this growth rate.

Model 2 is re-estimated in sub-samples based on the percentage of youth bulge[25]. It is estimated in countries where the percentage is greater than or equal to 39.38%[26]. The independent effect of youth bulge has the expected positive sign and significant coefficient at the 1% level in countries where the percentage is less than the threshold percentage. The effect has a negative sign and is not significant in countries where the percentage is greater than the threshold due to an insufficient number of observations.

Model 2 is also re-estimated based on the percentage 24.278%[27]. The independent effect of youth bulge retains its sign and is significant in countries where the percentage is less than or equal to the threshold percentage; however, in countries where the percentage is greater, the independent effect has negative sign and significant coefficient at the 10% level.

Model 2 is next re-estimated based on the percentage 31.407%[28]. Youth bulge exposes political risk in countries where the percentage is less than or equal to the threshold as the independent effect of youth bulge has a positive sign and significant coefficient at the 1% level; however, in countries where the percentage is greater than the threshold the independent effect of youth bulge has a negative sign and is not significant.

Model 2 is then re-estimated in countries where the percentage of youth bulge falls between 34.411% and 42.937%[29]. The independent effect of youth bulge has a negative sign and is not significant for the percentage that falls within the specified range; however, it has a positive sign and significant coefficient at the 1% level where the percentage is less than 34.411%.

The empirical results estimated based on the percentage of youth bulge show that countries where youth bulges less than the threshold percentage experience higher risk of political instability. There are several prospective scenarios behind the empirical results. The first scenario is that the risk of political instability in some countries is driven by factors other than the percentage of youth bulge. For example, in the MENA

[25] The results are reported in the appendix.
[26] The percentage is for quintiles 99.
[27] The percentage is for quintiles 25; the results are reported in the appendix.
[28] The percentage is for quintiles 50; the results are reported in the appendix.
[29] From the percentage in quintile 75 to maximum percentage in the data set; results reported in the appendix.

region Lebanon has the lowest percentage of youth bulge 29% in the region and a high level of political instability 11; in contrast, Saudi Arabia has one of highest percentages of youth bulge 31% in the region and enjoys a higher level of stability 6.5. In the second scenario, poor performance in some factors may be offset by high performance in other factors. For example, a low level of democracy can be tolerated in some countries as long as economic opportunities are abundant. On the other hand, a high level of democracy in a country with poor economic performance can offer a political channel to relieve public dissatisfaction. Youth bulge alone may not explain the rise in political instability, however youth bulge along with other socioeconomic factors can better explain the variation of political instability across countries. Hence, the joint effects of youth bulge are crucial to examine the rise in political instability in a country.

Mode 3 investigates the impact of youth bulge on political instability in OECD countries. The independent effect of youth bulge enhances political instability; however, it exposes lower risk on OECD countries as the interaction term between youth bulge and OECD has a negative sign and is significant at the 10% level. One standard deviation increase in youth bulge in OECD countries enhances instability by 0.617 units[30] in comparison with 1.091 units in non-OECD countries[31].

Although youth bulge exposes risk on political environment in OECD and non-OECD countries, characteristics like institutional structures in each sub-sample might reduce their impact on political environment. Institutional structures in OECD countries might prevent the risk of youth bulge to escalate into severe conditions of political instability; while, in non-OECD countries the absent or weak of such structures could lead to severe conditions of political instability. Hibbs (1973) indicates that the modernization process produces stability in Western Europe and Northern America because they successfully create a system that integrates all classes in society. Alternatively, factors contributing to instability in each sub-sample may diff based on the stage of the modernization process. In OECD countries that reach a high level of economic development the role of youth bulge on political instability is driven by factors other than poor living conditions. For example, 50,000 students demonstrated in London streets in 2010 to express their anger against the government plan to raise university tuition fees and decreasing its grants to universities (Paul et al., 2010) . On

[30] The independent effect of youth bulge + the coefficient of its interaction with OECD dummy = 0. 129*(4.784)(St. dev of youth bulge in OECD countries)=0. 617 unit.
[31] The independent effect of youth bulge (0.194)*(5.628)(St. dev of youth bulge in non-OECD countries)=1.091 unit.

other hand, in non-OECD countries the role of youth bulge on political environment could be driven by other factors that worsen with rapid modernization processes like income inequality. Oslen (1963), Huntington (1968) and Ansani and Daniele (2012) indicate that the level of income inequality increases in countries at an early stage of the modernization process. This is because the benefits from economic growth are not distributed equally across the population. However, at the late stage of modernization the level of income inequality decreases. Huntington (1968) points out to another channel that increases the level of income equality at early stages of modernization. The author indicates that rapid economic growth increases the inflation rate that exceeds the increases in wage level. All control variables have the expected significant sign except level of democracy, gross tertiary enrolment and urban growth rate.

Model 4 examines the variation in political instability associated with the percentage of youth bulge in oil countries versus non-oil countries[32]. Oil countries face a higher risk of political instability than non-oil countries, as the oil dummy has a positive sign and significant coefficient at the 1% level. Attractiveness of oil rents might motivate many parties (including law breakers) to use violence to gain access to oil rents as indicated by rent seeking theory. The independent effect of youth bulge enhances political instability but their political risk is lower in oil than non-oil countries as the interaction term between oil and youth bulge has a negative sign and is significant at the 1% level[33]. Oil rents make the political risk of youth bulge negative and their impact on political environment becomes negligent. Despite of a negative coefficient for youth bulge in oil countries, political instability should be on an increase given oil dummy has strong positive coefficient. A standard deviation decrease in youth bulge in oil countries enhances political instability by 0.337 units or 1.5% of one standard deviation of political instability[34]. In contrast, one standard deviation increase in youth bulge escalates political instability in non-oil countries by 1.405 units or 5% of one standard deviation of political instability[35].

[32] The model is estimated by introducing an oil dummy and rents from natural resources as a percentage of GDP; the sign and significance of oil dummy and its interaction terms are similar to that captured in model 4; results not reported. Natural resources rents as a percentage to GDP was dropped from the model because the oil dummy was introduced

[33] The model is re-estimated by dropping Norway from oil countries; oil dummy and its interaction with youth bulge retain their sign and significance, results not reported.

[34] The independent effect of youth bulge + the coefficient of its interaction with oil dummy = -0.06*(5.633)(St. dev of youth bulge in oil countries)=0.337 unit Or 1.5% = (0.06*100)/(4.071) (St. dev of political instability in oil countries).

[35] The independent effect of youth bulge (0.184)*(7.635)(St. dev of youth bulge in non-oil countries=1.405 unit or 5%= (0.184*100)/(3.985)(St. dev of political instability in non-oil countries).

It might be that the role of youth bulge on political environment in oil countries is not independent and goes through other factors such as income distribution pattern, institutional quality, fluctuation in oil prices and rapid change in the modernization process as suggested by rent seeking theory. Alternatively, it might be that the Dutch disease model crowds out women from labor markets (M. Ross et al., 2011) and rapid economic growth in some of these countries creates shortages in native labor forces and causes more reliance on foreign workers to sustain their economic prosperity. Under such conditions the risk of political instability shifts from youth bulge to a high percentage of foreign workers among the population in these countries. For example, foreign workers make up 44% of the population and 62% of the labor force in oil wealth monarchies in the Arabic peninsula. The high percentage of foreign workers in these countries creates prospective risk on political environments over the long run, such as civil unrest and interference of foreign countries in their internal affairs in order to protect the interests of their citizen (Forstenlechner and Rutledge, 2011). Control variables have the expected significant sign except level of democracy and urban growth rate that have an insignificant expected sign.

Model 5 examines the impact of youth bulge on political instability in democratic countries. Democratic countries are at lower risk of political instability than autocratic countries as the democracy dummy has a negative sign and is significant at the 1% level. Interestingly, youth bulge constitutes a higher risk on the political environment in democratic countries than autocratic countries as the interaction term between youth bulge and democratic dummy shows a positive sign and is significant at the 5% level. Despite of the positive coefficient of youth bulge in democratic countries, political instability should be on a decline as democracy dummy has strong and negative coefficient. One standard deviation increase in youth bulge enhances political instability in democratic countries by 1.472 units or 7% of one standard deviation of political instability[36] in comparison with 0.454 units or 1.82% in autocratic countries[37].

It might be that the level of democracy is immature so that it becomes a channel of political instability more than stability, especially that this study uses dummy variables to group countries into democratic and autocratic countries. However, it is expected that

[36] The independent effect of youth bulge + the coefficient of its interaction with the dummy of democracy =0.196*(7.510)(St. dev of youth bulge in democratic countries)=1.472 unit or 7% = (0.196*100)/(2.948) (St. dev of political instability in democratic countries).

[37] The independent effect of youth bulge (0.079)*(7.510)(St.dev of youth bulge in autocratic countries=0.454 unit or 1.82%= (0.079*100)/(3.985)(St. dev of political instability in autocratic countries).

adherence to democratic practices vary across these countries. Goldstone (2001) points out that either lack of democracy or immature democratic practices have a destabilization effect on political environment. Håvard Hegre, Ellingsen, Gleditsch, and Gates (2001) point out that coherent democracies and harshly authoritarian states are less prone to political instability than intermediate regimes because in democracies conflict is settled politically and by repression measurement in authoritarian states. Alternatively, free media in democratic countries is able to report youth dissatisfaction more than in autocratic countries. On other word, instability in democratic countries might reflect the increasing level of media coverage more than the actual risk of instability. Instead, democracy offers equal opportunity to all members of the public to raise their demands peacefully. However, it might be that a government does not have sufficient financial resources to accommodate all public demands so that requirements of some segments of society are not met, which in turn can push them to violence. There could also be a non-linear relationship between the joint effect of democracy and youth bulge, which will be tested in the subsequent non-linear section. Control variables have the expected significant sign except gross tertiary enrolment and urban growth that have an insignificant negative and positive sign respectively.

Model 6 investigates the impact of youth bulge on political instability in the MENA region. The MENA region faces a higher risk of political instability than non-MENA regions as its dummy has a positive sign and is significant at the 10% level. Many international parties have a strong interest in the region either because of oil supplies or its location in the middle of international trade routes. However, youth bulge exposes lower political risk in MENA than non-MENA regions as the interaction between youth bulge and MENA has a negative sign and is significant at the 1% level. Despite of the lower risk of youth bulge in MENA region, political instability should be on an increase as MENA dummy has strong and positive coefficient.

The lower risk of youth bulge in the MENA region might be driven by the variation in their percentage and the level of political instability across countries in the region. One group of countries have a low percentage of youth bulge in comparison with the mean percentage of the region but at same time have high level of instability; while a second group have a high percentage of youth bulge but a low level of instability in comparison with the average score of instability in a region. For example, in the MENA region, the average percentage of youth bulge in Lebanon is 29.4% lower than the average percentage in the region, which is 32%, but it has a high level of

instability (around 11) in comparison with 7.76, the average score of instability in region. On the other hand, Syria, Egypt and Tunisia have been going through a period of political instability since late 2010. In these countries the percentage of youth bulge is higher than the region mean, but the score of instability in the case of Syria and Tunisia is less than the region mean and only one score higher in the case of Egypt.

Alternatively, it might be the role of youth bulge on political instability in the region is moderated by other factors. Several authors such as Xenos and Kabamalan (2005), Urdal (2006), Marcus et al. (2008) and Barakat and Urdal (2009) suggest that the presence of a high percentage of youth bulge in a country does not necessary lead to political instability and their adverse impact on political environment is instead moderated by their interaction with the prevailing socioeconomic and political environment, which will be subsequently tested in this study. Control variables have a significant expected sign except for gross tertiary enrolment that has an insignificant positive sign.

Table 2.2 The Independent Effect of Youth Bulge on Political Instability over the Period 1984-2013

Independent variables	Dependent variable: Political Instability					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
YB	0.251*** (0.007)	0.219*** (0.028)	0.194*** (0.034)	0.184*** (0.029)	0.079 (0.056)	0.241*** (0.028)
TYU		0.466** (0.209)	0.355* (0.213)	0.620*** (0.203)	0.421** (0.197)	0.783*** (0.184)
Rents		-0.0437*** (0.014)	-0.050*** (0.015)			-0.020* (0.013)
TO		-0.003*** (0.001)	-0.002* (0.001)	-0.004*** (0.001)	-0.002** (0.001)	-0.003** (0.001)
GDP growth		-0.328*** (0.071)	-0.344*** (0.071)	-0.308*** (0.070)	-0.316*** (0.069)	-0.326*** (0.075)
RT		-0.026 (0.046)	-0.003 (0.046)	-0.059 (0.049)		-0.162*** (0.053)
GTE		-0.007 (0.005)	-0.007 (0.006)	-0.019*** (0.007)	-0.007 (0.005)	0.001 (0.005)
Log T.pop		1.269*** (0.169)	1.544*** (0.193)	0.924*** (0.201)	1.146*** (0.162)	1.079*** (0.164)
UGR		0.049 (0.040)	0.045 (0.040)	0.034 (0.041)	0.025 (0.037)	0.066*** (0.038)
OECD			0.061 (0.820)			
OCED*YB			-0.065* (0.036)			
Oil				4.595*** (1.751)		
Oil*YB				-0.244*** (0.070)		
Democracy Dummy (DD)					-4.012*** (1.552)	
Democracy Dummy (DD) *YB					.117** (0.057)	
MENA						11.15* (6.178)
MENA*YB						-0.510*** (0.189)
Constant	0.586*** (0.183)	-3.233** (1.481)	-3.403** (1.478)	-0.325 (1.778)	1.029 (1.661)	-1.505 (1.449)
Adjusted R square	22%	28%	30%	26%	28.00%	37%
Number of observation	3396	617	617	590	633	617
Estimation method	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS
P-value	0	0	0	0	0	0
Number of instrument	1	1	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10 percent, 5 percent and 1 percent level, respectively. YB is youth bulge, TYU is rate of total youth unemployment, Rents is rents from natural resources, TO is trade openness, GDP growth is GDP annual growth, RT is level of democracy, GTE is gross tertiary enrolment, Log T.pop is logarithm of total population and UGR is urban growth rate

2.7 The Empirical Results of the Role of Youth Bulge on Political Instability: Non-linear Estimation

The lower risk of youth bulge on political environment in the MENA region, oil countries and their higher risk in democratic countries suggests that the relationship might be non-linear. Hence, the following subsection examines the impact of the quadratic term of youth bulge, the joint effect of youth bulge and quadratic term of the level of democracy, and the joint effect of youth bulge and quadratic term of rents from natural resources on instability.

2.7.1 The Empirical Results of the Impact of Quadratic Term of Youth Bulge on Political Instability

Although there is some debate in the literature on the percentage of youth bulge that increases the risk of political instability; Huntington (1996) suggests when the percentage exceeds 20% of total population. The empirical results of the impact of quadratic term of youth bulge on instability are shown in Table 2.3.

Model 7 examines the impact of the non-linear term of youth bulge on instability in the panel data. The linear coefficient of youth bulge is positive and significant at the 1% level suggesting that a higher proportion of youth bulge enhances political instability. One standard deviation increase in youth bulge boosts political instability by 3.241 units or 12% of one standard deviation of political instability[38]. The quadratic term has a significant negative sign; empirical results suggest that the percentage of youth bulge enhances instability until it reaches a certain level upon which it has a lower destabilization effect on political environment. It might be that when the percentage started increasing a country lacked institutional structures to deal with risk associated with youth bulge; however, its accumulative experience with such risk leads a country to invest in institutional structures. This makes it more responsive to needs and requirements of youth bulge so that their threat to stability is eliminated. The empirical results confirm the Huntington (1996) argument but are in conflict with the results of Urdal (2006) who finds no relationship. Control variables have a significant expected sign except the level of democracy and gross tertiary enrolment that have an insignificant negative sign and urban growth rate that has an insignificant positive sign.

[38] The independent effect of youth bulge 0.493*(6.575)(St. dev of youth bulge in the entire sample)=3.241 unit or 12% = (0.493*100)/(4.030) (St. dev of political instability in the entire sample).

Model 8 examines the impact of quadratic term of youth bulge on instability in OECD countries. The independent effect of youth bulge exposes lower risk on political environment in OECD compared to non-OECD countries. The quadratic term of youth bulge shows that their political risk decreases as youth bulge percentage increases; however, it is higher in non-OECD than OECD countries. Control variables have the expected significant sign except youth unemployment, level of democracy, gross tertiary enrolment and urban growth rate.

Model 9 examines the quadratic term of youth bulge on political instability in oil countries. As in Model 4, the independent effect of youth bulge exposes lower political risk in oil than non-oil countries. The quadratic term has a negative sign and its impact is higher in oil than non-oil countries[39]. It could be that the results for oil countries are driven by the level of political instability of some countries, like Norway, that have a low percentage of youth bulge and a high level of stability. The model is re-estimated by dropping Norway from the oil countries; the independent effect of youth bulge and its quadratic term retain their sign and significance in oil countries[40]. Control variables have a significant sign except level of democracy and urban growth rate.

Model 10 investigates the quadratic term of youth bulge on political instability in democratic countries. The independent effect of youth bulge exposes higher political risk in democratic than autocratic countries[41]. The quadratic term has a negative sign although it is insignificant in democratic and autocratic countries. Control variables have the expected significant sign except gross tertiary enrolment and urban growth rate.

Model 11 investigates the impact of the quadratic term of youth bulge on instability in the MENA. The independent effect of youth bulge constitutes lower political risk in MENA than non-MENA regions. The quadratic term has a positive sign but is not significant in MENA and non-MENA regions. Empirical results suggest that the relationship between two variables is non-linear in the region; youth bulge becomes a threat to stability once their percentage passes a certain threshold level. Control variables have the significant expected sign except gross tertiary enrolment and urban growth rate.

[39] The model is re-estimated by dropping Norway, oil dummy; its interaction with youth bulge and youth bulge squared retain their sign and significant results not reported.
[40] The results not reported.
[41] The level of democracy is dropped from the model.

Table 2.3 The Quadratic Term of Youth Bulge and Political Instability over the Period 1984-2013

Independent variables	Dependent variable: political instability				
	Model 7	Model 8	Model 9	Model 10	Model 11
YB	0.493*** (0.162)	0.088 (0.063)	0.168*** (0.054)	0.084 (0.073)	0.252*** (0.056)
YB_SQ	-0.005* (0.003)	-0.013** (0.005)	-0.002 (0.003)	-0.003 (0.106)	0.0006 (0.003)
OECD		-2.246*** (0.435)			
OCED*YB		-0.015 (0.087)			
OCED*YB_SQ		0.009 (0.006)			
Oil			-1.806** (0.897)		
Oil*YB			-0.343*** (0.127)		
Oil*YB_SQ			-0.021 (0.016)		
DD				-0.880* (0.509)	
DD*YB				0.093 (0.110)	
DD*YB_SQ				-0.0002 (0.011)	
MENA					-3.747*** (0.906)
MENA*YB					-0.607*** (0.230)
MENA*YB_SQ					0.030 (0.031)
Constant	-5.581*** (1.992)	4.103** (1.608)	5.319*** (1.739)	3.899*** (1.087)	5.436*** (1.418)
Adjusted R square	27%	29%	25%	30%	36%
Number of observation	617	617	519	625	617
Estimation method	2SLS	2SLS	2SLS	2SLS	2SLS
Wald test (P-value)					
P-value	0	0	0	0	0
Number of instrument	1	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10 percent, 5 percent and 1 percent level, respectively. All models include all the control variables, which are included in model 2; for space restriction only the results of variables of interest are reported.

2.7.2 The Empirical Results of Joint Effect of Quadratic Term of Level of Democracy and Youth Bulge on Political Instability

The impact of the independent effect of youth bulge on political instability in democratic countries, oil countries and the MENA region is investigated further by including the interaction of quadratic term of the level of democracy and youth bulge

into the model[42]; the results are shown in Table 2.4[43]. Past empirical research finds that the impact of the level of democracy on instability is non-linear, all other things being constant, see for example Håvard Hegre et al. (2001) and Goldstone (2010) who find that partial democracy and partial autocracy is positively and significantly associated with the onset of civil war; however, there is no impact in full democracy.

Model 12 introduces the independent effect and quadratic term of the level of democracy into the model in panel data. The linear coefficient of the level of democracy is negative although not significant; suggesting that a low level of democracy enhances political instability. The quadratic term has positive sign; empirical results suggest that a low level of democracy enhances instability until it reach a certain level where upon it has a higher destabilization effect on political environment. Lack of political channels prevents the public from raising their demands peacefully. Furthermore, it is expected that at a low level of democracy, basic human rights may be violated. Thus, the absence of democratic channels might force the public to use violence to achieve their needs. The results confirm the results of past empirical research that the relationship is non-linear; however, its impact is different. Urdal (2006) finds a low level of democracy enhances instability but at a high level it decreases instability. Youth bulge and control variables have the significant expected sign except gross tertiary enrolment and urban growth rate that have an insignificant expected sign.

Model 13 examines the impact of interaction between the quadratic term of the level of democracy and youth bulge on instability in the panel data. The independent effect of the level of democracy and its quadratic term has a negative and positive sign, respectively, but is not significant. The interaction between youth bulge and level of democracy and its interaction with the quadratic term of democracy have a positive sign but are insignificant. The results suggest that increasing the level of democracy enhances the role of youth bulge on political instability; however, their risk becomes higher when the level of democracy exceeds a certain threshold level. Democracy forces a government to be more responsive to youth bulge needs and requirements; the failure to do so enhances political instability. These results are in line with Urdal (2006) who finds that the effect of youth bulge is not only stronger in autocratic countries but also in most democratic countries. The independent effect of youth bulge has a positive sign

[42] The quadratic term of the level of democracy is calculated from Polity IV project data that ranks countries in a scale from 0 to 21.
[43] The model is not estimated for OECD and democratic countries because they are fully democratic countries.

but is not significant; control variables have the expected significant sign except gross tertiary enrolment and urban growth rate.

Model 14 examines the impact of the joint effect between youth bulge and the quadratic term of the level of democracy on political instability in oil countries[44]. The independent effect of youth bulge enhances political instability; however their risk is lower in oil countries as the interaction term between youth bulge and oil dummy has a negative sign although is not significant. The joint effect between youth bulge and the level of democracy has a negative sign and is significant at the 1% level; however, it becomes positive in oil countries as the interaction term between the joint effect and oil dummy has a positive sign and is significant at the 1% level. The joint effect between youth bulge and quadratic term of democracy has a positive sign and is significant at the 1% level; but it turns into a negative impact in oil countries as the interaction term between the joint effect and oil dummy has a negative sign and is significant at the 10% level.

The results suggest that democracy produces a different effect on political instability in oil and non-oil countries in the presence of youth bulge. In non-oil countries, a low level of democracy enhances the political risk of youth bulge; however, once it passes a certain level their risk becomes higher. It could be there is imbalance between development in political environment and in socioeconomic environment (Huntington 1968). In oil countries, the political risk of youth bulge increases as the level of democracy increases; however, once it passes a certain level their risk reduces. Transition from autocracy to democracy in oil countries enhances political instability because democratic practices restrict the political elite from fully controlling oil rents. Youth bulge at a low level of democracy might press for more transparency of the patterns used to distribute oil rents. The fighting between interested groups and youth bulge might lead to instability. Ross (2001) point out that in the absence of democracy, the public and rebels experience difficulty in figuring out the level of oil revenues and the amounts siphoned out by the political elite. For example, Shambayati (1994) indicates that the Iranian revolution in 1979 was partially caused by unequal income distribution of oil revenues that raised demand from the public to understand the distribution mechanism used to distribute oil revenues. However, at a high level of democracy, the public, elite and youth bulge become more adherent to democratic

[44] The model is re-estimated by dropping Norway from oil countries; variables of interest retain their sign and significance, the results are not reported.

practices so its destabilization effect becomes lower. Youth bulge has an insignificant negative sign and control variables have the expected significant sign.

Model 15 examines the impact of the interaction between quadratic term of the level of democracy and youth bulge on instability in the MENA region. The joint effect between youth bulge and democracy has a negative sign and is significant at the 1% level. However, it constitutes lower risk in the MENA region as the interaction term between MENA and the joint effect has a positive sign although it is not significant. The joint effect between youth bulge and quadratic term of democracy has a positive sign and is significant at the 1% level; however, it turn into a negative impact in the MENA region as the interaction term between MENA and the joint effect has a negative sign and is significant at the 10% level. The results suggest that a low level of democracy enhances the role of youth bulge on political instability in the MENA region until it reaches a certain level where upon youth bulge has a lower destabilization effect on political environment. On the other hand, in non-MENA regions it increases the role of youth bulge on instability at a low level of democracy; however, once it passes a certain level they have a higher destabilization effect on political environment. Ongoing instability in some MENA countries that experience instability during the transition period from dictatorship to democracy (like Libya) does not support the empirical results. Youth bulge and control variables have a significant sign except rents from natural resources, gross tertiary enrolment and urban growth rate.

Table 2.4 The Joint Effect of Quadratic Term of Level of Democracy and Youth Bulge on Political Instability over the Period 1984-2013

Independent variables	Dependent variable: political instability			
	Model 12	Model 13	Model 14	Model 15
YB	0.219*** (0.033)	0.047 (0.054)	-0.054 (0.064)	0.178*** (0.064)
RT	-0.027 (0.217)	-0.040 (0.058)	-0.150** (0.063)	-0.276*** (0.049)
RT_SQ	0.0002 (0.007)	0.011 (0.009)	0.022** (0.010)	0.026*** (0.008)
YB*RT		0.003 (0.011)	-0.030*** (0.007)	-0.037*** (0.006)
YB*RT_SQ		0.002 (0.001)	0.006*** (0.001)	0.004*** (0.0009)
Oil			-27.205*** (4.651)	
Oil*YB			-0.740*** (0.182)	
Oil*RT			-2.065*** (0.421)	
Oil*RT_SQ			-0.029** (0.014)	
Oil*YB*RT			0.078*** (0.014)	
Oil*YB*RT_SQ			-0.010*** (0.003)	
MENA				-7.887 (25.827)
MENA*YB				-0.198 (0.904)
MENA*RT				-0.373 (2.433)
MENA*RT_SQ				-0.057* (0.033)
MENA*YB*RT				0.015 (0.077)
MENA*YB*RT_SQ				-0.018* (0.009)
Constant	-3.557*** (1.068)	2.643*** (1.004)	4.234*** (1.268)	2.820*** (0.999)
Adjusted R square	28%	30%	27%	40%
Number of observation	617	617	590	617
Estimation method	2SLS	2SLS	2SLS	2SLS
P-value	0	0	0	0
Number of instrument	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10 percent, 5 percent and 1 percent level, respectively. Variables included in model 2 are included into all models; for space restrictions only the results of variables of interest are reported.

2.7.3 The Empirical Results of Joint Effect of the Quadratic Term of the Rents from Natural Resources and Youth Bulge on Political Instability

Past empirical research finds that the impact of rents from natural resources on political instability, ceteris paribus, is non-linear[45]. In this section the joint effect between the quadratic term of rents from natural resources and youth bulge on instability will be tested; the results are shown in Table 2.5[46].

Model 16 examines the impact of the quadratic term of rents from natural resources on instability in the panel data. The independent effect of rents from natural resources and its quadratic term have a negative sign but are not significant. The results suggest that a low level of rents from natural resources enhances political instability until it passes a certain level, then it has a lower destabilization effect on political environment. Youth bulge and control variables have a significant expected sign except the level of democracy, gross tertiary enrolment and urban growth rate that have insignificant signs.

Model 17 examines the impact of the joint effect of the quadratic term of rents from natural resources and youth bulge on instability in the panel data. The independent effect of rents from natural resources and its quadratic term retain their sign and significance obtained in the previous model. The joint effect between youth bulge and rents from natural resources and the joint effect between the quadratic term of rents from natural resources and youth bulge have a negative sign but are insignificant. The results suggest that their role on political instability is enhanced at a low level of rents; however, once it passes a certain level their destabilization effect decreases. Youth bulge and control variables have a significant expected sign except level of democracy, gross tertiary enrolment and unban growth rate that have insignificant signs.

In Model 18 the impact of the joint effect between quadratic term of rents from natural resources and youth bulge on instability in the MENA region is examined. The so-called Arab spring event in 2010 did not have a uniform impact on political environments across all countries in the region. One possible explanation is that wealthy oil countries in the region managed to skip the incidence whereas in other countries oil wealth is insufficient, leading to severe cases of political instability. The joint effect

[45] See for example Bjorvatn and Naghavi (2011) and Collier and Hoeffler (1998)

[46] Quadratic term of rents from natural resources in calculated from its percentage to GDP. The joint effect will not be tested in OECD or democratic countries because rents from natural resources is only 2% in OECD and 3% in democratic countries.

between youth bulge and rents from natural resources has a positive sign; however, it becomes negative in the MENA region as the interaction effect between MENA and the joint effect has a negative sign. The joint effect between youth bulge and quadratic term of rents from natural resources has a positive sign and its impact is higher in the MENA region. The results suggest that their role on political instability in the MENA region is enhanced at a low level of rents; however, once it passes a certain level their destabilization effect increases. The results can be attributed to an imbalance between growth rate in rents on one hand and the size of population or its growth rate on the other hand. At a low level of rents, the level is insufficient to match the needs and requirements of the population or increasing demand associated with rapid change in population growth rate which leads to instability. The condition worsens with continuous increases in youth bulge while oil revenue remained unchanged. The World Bank Report published in 2012 presents that in the case of Yemen, where rents from natural resources do not match growth rate in population (especially growth rate in youth bulge), there is a subsequent fall in living standards across all segments of population. Alternatively, it could be that while the contribution of oil to GDP is high, its contribution to total government revenue is low because of low oil prices that are insufficient to keep pace with past public expenditure. Youth bulge and control variables have the expected significant sign except gross tertiary enrolment and urban growth rate that are insignificant.

Table 2.5 The Joint Effect of Quadratic Term of Rents from Natural Resources and Youth Bulge on Political Instability over the Period 1984-2013

Independent variable	Dependent variable: political instability		
	Model 16	Model 17	Model 18
YB	0.206*** (0.031)	0.157*** (0.045)	0.199*** (0.045)
Rents	-0.021 (0.025)	-0.039 (0.033)	-0.23 (0.037)
Rents_SQ	-0.001 (0.0008)	-0.0004 (0.001)	-0.0004 (0.002)
YB*Rents		-0.008 (0.004)	0.001 (0.004)
YB*Rents _SQ		-0.00003 (0.0001)	0.0006 (0.0004)
MENA			-3.609*** (1.136)
MENA*YB			-0.535** (0.219)
MENA*Rents			0.044 (0.082)
MENA*Rents_SQ			-0.0004 (0.002)
MENA*YB*Rents			-0.002 (0.015)
MENA*YB*Rents_SQ			0.00004 (0.0005)
Constant	-3.019* (1.745)	3.018*** (1.467)	5.3922*** (1.451)
Adjusted R square	29%	30%	37%
Number of observation	617	617	617
Estimation method	2SLS	2SLS	2SLS
P-value	0	0	0
Number of instrument	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10 percent, 5 percent and 1 percent level, respectively. Variables included in model 2 are included into all models; for space restrictions only the results of variables of interest are reported.

2.8 The Joint Effect between Youth Bulge and Political and Socioeconomic Environment

Youth bulge in itself can escalate stability in a country with a favorable socioeconomic and political environment. Macunovich (2000) and Goldstone (2002) indicate that understanding the role of youth bulge on instability requires consideration of their interaction with socioeconomic and political environments that lead to stabilization or destabilization of the overall political environment. In this section the impact of youth bulge on instability moderated by economic growth, youth unemployment, the level of democracy, educational attainment and rents from natural

resources on instability is tested in the panel data, OECD, oil countries, democratic countries and the MENA region.

2.8.1 The Joint Effect Between Economic Growth and Youth Bulge on Political Instability

Models 19 to 23 in Table 2.6 examine the impact of the joint effect between economic growth and youth bulge on political instability in the panel data, OECD countries, oil countries, democratic countries and the MENA region.

Model 19 examines the impact of the joint effect between youth bulge and economic growth on political instability in the panel data. The independent effect of youth bulge has a positive sign and significant coefficient at the 1% level; it suggests that youth bulge enhances political instability. The independent effect of economic growth has a negative sign and is significant at the 1% level, indicating that poor economic growth enhances political instability. The joint effect between economic growth and youth bulge has a negative sign and is significant at the 5% level. The interaction effect of economic growth at the mean percentage of youth bulge 34.915% on instability in Sudan is -2.036[47]. A standard deviation decrease in economic growth at the mean percentage of youth bulge escalates instability in Sudan by 12.061 units or 39% of one standard deviation of political instability[48]. The interaction effect of youth bulge at mean percentage of economic growth 3.435% on instability in Sudan is 0.055[49]. A standard deviation increase in youth bulge at mean percentage of economic growth enhances instability by 0.059 units or 1.052% of one standard deviation of political instability[50]. The results indicate that the interaction effect of economic growth has a significant impact on political instability; however, the interaction effect of youth bulge is not significant. Moreover, economic growth shows a much stronger effect than youth bulge at the average value of both these variables.

The empirical results reveal that, in the case of Sudan, while economic growth can reduce the risk of youth bulge on stability, it fails to abolish it. The results support

[47] It is calculated by the coefficient of economic growth (-0.64) + [(the coefficient of the joint effect (-0.040)*(34.915) (mean percentage of youth bulge in Sudan)] =-2.036

[48] One standard deviation decrease in economic growth is its coefficient in interaction term(-2.036)*(5.922)(St. dev of economic growth in Sudan) =12.061 unit or 39% = (-2.036*100)/(5.224)(St. dev of political instability in Sudan).

[49] It is calculated by the coefficient of youth bulge (0.193) + [(the coefficient of the joint effect (-0.040)*(3.435) (mean percentage of economic growth in Sudan)] =0.055

[50] One standard deviation increase in youth bulge is its coefficient in interaction term (0.055)*(1.073)(St. dev of youth bulge in Sudan) =0.059 unit Or 1.052% = (0.055*100)/(5.224)(St. dev of political instability in Sudan).

one stream of modernization theory that states economic growth has a stabilization effect on political environment. Positive economic growth associated with modernization increases an individual's opportunity cost to commit incidences of political instability through several channels (Collier and Hoeffler, 2002). It determines the level of income and economic opportunities in a country as indicated by Blattman and Miguel (2010). Similarly, Urdal (2006) points out the moderated effect in the role of youth bulge on political instability is increased when income opportunities are determined by overall economic performance. The empirical results represent a departure from Urdal (2006) who finds a negative sign but no significance between the two variables. Control variables have the expected significant sign except the level of democracy and gross tertiary enrolment that have an insignificant negative sign.

Model 20 examines the impact of the joint effect between economic growth and youth bulge on political instability in OECD countries. The independent effect of youth bulge exposes risk to political environment, but the risk is lower in OECD countries than non-OECD as the interaction term between OECD dummy and youth bulge has a negative sign and is significant at the 5% level. The independent effect of economic growth has a negative sign and is significant at the 1% level. The joint effect has a negative sign and is significant at the 1% level; however, it exposes lower risk in OECD countries than non-OECD as the interaction term between OECD countries and the joint effect has a positive sign. The interaction effect of economic growth at mean percentage of youth bulge 20.376% on political instability in OECD countries is -1.549[51]. A standard deviation decrease in economic growth at mean percentage of youth bulge increases instability in OECD countries by 4.783 units or 68% of one standard deviation in political instability[52]; in comparison with 16 units or 55% in non-OECD countries[53]. The interaction effect of youth bulge at mean percentage of economic growth 3.097 on political instability in OECD countries is -0.076[54]. One standard deviation decrease in youth bulge at mean percentage of economic growth enhances instability by 0.384 units

[51] The coefficient of economic growth + [(the coefficient of joint effect + the coefficient of its interaction with OECD dummy)(20.376)(mean percentage of youth bulge in OECD)= -1.549

[52] One standard deviation decrease in economic growth is its coefficient in interaction term (-1.549)*(3.146)(St. dev of economic growth in OECD) =4.873 unit or 68% = (-1.549*100)/(2.280)(St. dev of political instability in OECD).

[53]The coefficient of economic growth + [(the coefficient of the joint effect)(30.675)(mean percentage of youth bulge in non-OECD)= -2.283. One standard deviation decrease in economic growth is its coefficient in interaction term (-2.283)*(6.962)(St. dev of economic growth in non-OECD) =16 unit or 55% = (-2.283*100)/(4.185)(St. dev of political instability in non-OECD).

[54](The coefficient of youth bulge + its coefficient in interaction with OECD)+[(the coefficient of the joint effect+ the coefficient of interaction with OECD dummy)(3.096)(mean percentage of economic growth in OECD)= -0.076.

or 3.3% of one standard deviation of instability[55] in comparison with 0.150 units or 0.62% in non-OECD countries[56]. The results indicate that the interaction effect of economic growth has a significant impact on political instability in both groups of countries; however, the interaction effect of youth bulge is not significant. Moreover, economic growth shows a much stronger effect than youth bulge at the average value of both these variables. Positive economic performance in both groups of countries succeed in making the risk of youth bulge on political environment negligible; however, non-OECD countries need to achieve a higher level of economic growth than their counterpart OECD countries in order to create employment opportunities that match their high percentage of youth bulge. Control variables have the expected significant sign except trade openness; however, the levels of democracy, gross tertiary enrolment and urban growth have the expected signs but are insignificant.

The impact of the joint effect between economic growth and youth bulge on instability is examined in democratic countries as shown in Model 21. Youth bulge raises the risk of political instability and such risk is higher in democratic than autocratic countries. The independent effect of economic growth enhances political instability. Economic environment is equally important to stability in democratic and autocratic countries. This suggests that factors affecting living standard (such as economic growth) are more important than moving from autocracy to democracy. Similarly, the joint effect has a negative sign and is significant at the 5% level. The interaction effect of economic growth at mean percentage of youth bulge 23.463% on political instability in democratic countries is -1.563[57]. Instability enhances by 6 units or 53% of one standard deviation of instability with each one standard deviation decrease in economic growth[58]; while it enhances instability in autocratic countries by 15 units or 42%[59]. The interaction effect of youth bulge at mean percentage of economic growth

[55]One standard deviation decrease in youth bulge is its coefficient in interaction term (-0.076)*(4.784)(St. dev of youth bulge in OECD) =0.368 unit or 3.3% = (-0.076*100)/(2.280)(St. dev of political instability in OECD).

[56]The coefficient of youth bulge + [(the coefficient of the joint effect)(4.152)(the mean percentage of economic growth in non-OECD)= -0.026. One standard deviation decreases in youth bulge is its coefficient in interaction term (-0.026)*(5.628)(St. dev of youth bulge in non-OECD) =0.150 unit or 0.62% = (-0.026*100)/(4.185)(St. dev of political instability in non-OECD).

[57]The coefficient of economic growth + [(the coefficient of the joint effect + its coefficient in interaction with Democratic dummy)(23.463)(mean percentage of youth bulge in democratic countries)= -1.563.

[58] One standard deviation decreases in economic growth is its coefficient in interaction term (-1.563)*(3.836)(St. dev of economic growth in democratic countries)=6 units or 53% = (-1.563*100)/(2.948)(St. dev of political instability in democratic countries).

[59] The coefficient of economic growth + [(the coefficient of the joint effect)(31.682)(mean percentage of youth bulge in autocratic countries)= -1.827. One standard deviation decrease in economic growth is its coefficient in interaction term (-1.827)*(8.145)(St. dev of economic growth in autocratic countries) =15 unit or 42% = (-1.827*100)/(4.349)(St. dev of political instability in autocratic countries).

3.246% on political instability in democratic countries is 0.057[60]. One standard deviation increase in youth bulge at mean percentage of economic growth enhances instability in democratic countries by 0.428 units or 2% of one standard deviation in instability[61]; in contrast, in autocratic countries one standard deviation reduction in youth bulge at mean percentage of economic growth enhances political instability by 0.327 units or 1.3% of one standard deviation in instability[62]. The results indicate that the interaction effect of economic growth has a significant impact on political instability; however, the interaction effect of youth bulge is not significant. Moreover, economic growth shows a much stronger effect than youth bulge at the average value of both these variables. Control variables have the expected significant sign except gross tertiary enrolment and urban growth rate.

Model 22 examines the impact of the joint effect between economic growth and youth bulge on instability in oil countries. Youth bulge exposes lower political risk in oil than non-oil countries. The independent effect of economic growth has a negative sign and significant coefficient at the 1% level. Poor economic growth creates pressure on political environments in oil and non-oil countries. It reduces the level of taxes and employment opportunities in non-oil countries, while in oil countries a combination of Dutch disease effect and poor economic growth creates pressure on government to interfere further in labor markets and the economic environment. The joint effect has a negative sign and is significant at the 5% level, but its risk is lower in oil countries as the interaction term between the joint effect and oil dummy has a positive sign. The interaction effect of economic growth at mean percentage of youth bulge 31% on instability in oil countries is -1.477[63]. Poor economic growth equivalent to one standard deviation escalates instability in oil countries by 12.305 units or 36% of one standard deviation of political instability[64] in comparison with 9.808 units or 42% of one standard

[60] (The coefficient of youth bulge + its coefficient in interaction with democratic dummy)+[(the coefficient of joint effect+ its coefficient of interaction with democratic dummy)(3.246)(mean percentage of economic growth in democratic countries)= 0.057.

[61] One standard deviation increase in youth bulge is its coefficient in interaction term (0.057)*(7.511)(St. dev of youth bulge in democratic countries) =0.428 unit or 2% = (0.057*100)/(2.948)(St. dev of political instability in democratic countries).

[62] The coefficient of youth bulge + [(the coefficient of the joint effect)(3.958)(the mean percentage of economic growth in autocratic countries)= -0.057. One standard deviation decrease in youth bulge is its coefficient in interaction term (-0.057)*(5.754)(St. dev of youth bulge in autocratic countries) =0.327 unit or 1.311% = (-0.057*100)/(4.396)(St. dev of political instability in autocratic countries).

[63] The coefficient of economic growth + [(the coefficient of the joint effect + its coefficient in interaction with oil dummy)(31)(mean percentage of youth bulge in oil countries)= -1.477.

[64] One standard deviation decrease in economic growth is its coefficient in interaction term (-1.477)*(8.331)(St. dev of economic growth in oil countries) =12 unit or 36% = (-1.477*100)/(4.072)(St. dev of political instability in oil countries).

deviation of instability in non-oil countries[65]. The interaction effect of youth bulge at mean percentage of economic growth 3.967% on instability in oil countries is -0.220[66]. Decreasing youth bulge by one standard deviation enhances instability in oil countries by 1.239 units or 5.4% of one standard deviation of instability[67]. In contrast, the interaction effect of youth bulge at mean percentage of economic growth on instability in non-oil countries is 0.020. Political instability increases by 0.149 units or 0.5% of one standard deviation of instability by each one standard deviation increase in youth bulge in non-oil countries[68]. The results indicate that the interaction effect of economic growth has a significant impact on political instability; however, the interaction effect of youth bulge is not significant. Moreover, economic growth shows a much stronger effect than youth bulge at the average value of both these variables

Economic growth is more important as a determinant of political instability in oil countries than non-oil countries. This is because rentier state theory states that government in oil countries forms an engine of economic growth that enhances stability in its jurisdiction, as indicated by Lipset (1959) as cited by De Mesquita and Smith (2009). Unpredictable circumstance like sharp decreases in international oil prices hurts governmental ability to act as an engine of economic growth as indicated by Lowi (2004), which turns oil from being a source of stability into one of instability. The current oil prices negatively affect government revenues in oil countries and consequently their ability to stimulate economic growth through high level of government expenditure. For example, a low level of government expenditure has a broad impact on economic activities in monarchies in the Arabian Peninsula. It has adverse impacts on the oil and gas sector, construction companies and related industries, banking sectors and educational services. Consequently, governments and privates sectors in the region have decreased demand for some professions such as engineers, lawyers, bankers and consultants. Furthermore, it increases living costs substantially as

[65] The coefficient of economic growth + [(the coefficient of the joint effect)(28.837)(mean percentage of youth bulge in non-oil countries)= -1.674. One standard deviation decrease in economic growth is its coefficient in interaction term (-1.674)*(5.860)(St. dev of economic growth in non-oil countries) =9.808 unit or 42% = (-1.674*100)/(3.985)(St. dev of political instability in non-oil countries).

[66](The coefficient of youth bulge + its coefficient in interaction with oil dummy)+[(the coefficient of the joint effect + its coefficient in interaction with oil dummy)(3.967)(mean percentage of economic growth in oil countries)= -0.220.

[67] One standard deviation decrease in youth bulge is its coefficient in interaction term (-0.220)*(5.633)(St. dev of youth bulge in oil countries) =1.239 unit or 5.4% = (-0.220*100)/(4.072)(St. dev of political instability in oil countries).

[68] The coefficient of youth bulge + [(the coefficient of the joint effect)(3.537)(mean percentage of economic growth in non-oil countries)= 0.020. One standard deviation increase in youth bulge is its coefficient in interaction term (0.020)*(7.635)(St. dev of youth bulge in non-oil countries) =0.149 unit or 0.5% = (0.020*100)/(3.985)(St .dev of political instability in non-oil countries).

governments in the region move to increase governmental fees as one measurement to deal with low oil prices (Arabian Business, 2016). While these countries have succeeded thus far to cope with low oil prices, in other oil countries such as Russia and Venezuela, the adverse impact on their economies has been rapid. These impacts include increases of interest rates to defend national currency in Russia, which creates further pressure on sluggish economic growth. It has also seen increases in inflation rate in Venezuela, which increases living costs (Bowler, 2015). Control variables have the expected significant sign except urban growth rate.

Model 23 examines the impact of the joint effect between economic growth and youth bulge on political instability in the MENA region. The independent effect of youth bulge enhances political instability; however, their risk is lower in MENA than non-MENA regions. The independent effect of economic growth has a negative sign and is significant at the 1% level. The joint effect has a negative sign and is significant at the 5% level; however, its impact is higher in MENA than non-MENA regions as the interaction term between MENA and the joint effect has a negative sign although it is not significant. The interaction effect of economic growth at mean percentage of youth bulge 32% on instability in the MENA region is -2.046[69]. A standard deviation decrease in economic growth in the MENA region sparks instability by 19 units or 47% of one standard deviation of instability[70]; in comparison with 10 units or 41.5% of one standard deviation in non-MENA regions[71]. The interaction effect of youth bulge at mean percentage of economic growth 5.145% on instability in the MENA region is -0.396[72]. Instability in MENA is enhanced by 1.730 units or 9% of one standard deviation of political instability by each one standard deviation decrease in youth bulge[73]. In contrast, the interaction effect of youth bulge at mean percentage of economic growth

[69] The coefficient of economic growth + [(the coefficient of the joint effect + its coefficient in interaction with MENA region)(32)(mean percentage of youth bulge in MENA countries)= -2.046.

[70] One standard deviation decrease in economic growth is its coefficient in interaction term (-2.046)*(9.532)(St. dev of economic growth in MENA countries) =19 unit or 47% = (-2.046*100)/(4.366)(St. dev of political instability in MENA countries).

[71] The coefficient of economic growth + [(the coefficient of the joint effect)(29.034)(mean percentage of youth bulge in non-MENA countries)= -1.651. One standard deviation decrease in economic growth is its coefficient in interaction term (-1.651)*(6.169)(St. dev of economic growth in non-MENA countries) =10 unit or 41.5% = (-1.651*100)/(3.977)(St. dev of political instability in non-MENA countries).

[72] (The coefficient of youth bulge + its coefficient in interaction with MENA dummy)+[(the coefficient of the joint effect+ its coefficient in interaction with MENA dummy)(5.145)(mean percentage of economic growth in MENA countries)= -0.396.

[73] One standard deviation decrease in youth bulge is its coefficient in interaction term (-0.396)*(4.364)(St. dev of youth bulge in MENA countries) =1.730 unit or 9% = (-0.396*100)/(4.366)(St. dev of political instability in MENA countries).

on instability in non-MENA regions is 0.071[74]. Political instability is enhanced in non-MENA regions by 0.478 or 2% of one standard deviation of political instability by each one standard deviation increase in youth bulge[75]. The results indicate that the interaction effect of economic growth has a significant impact on political instability; however, the interaction effect of youth bulge is not significant. Moreover, economic growth shows a much stronger effect than youth bulge at the average value of both these variables.

The empirical results of the interaction effect of economic growth on political environment in the MENA region suggest that the region can enhance its stabilization effect by addressing some restricting factors. These factors are mainly a high level of corruption as indicated by Ross et al. (2011) and a high level of economic exclusivity that contributed to the fall of the Mubarak regime in Egypt as indicated by Shehata (2011). By doing so, it might be possible to address the imbalance between economic growth and population growth rate, which has been found to be among the highest in the world (O'Sullivan et al., 2011) despite of the economic growth in the region over the sample period being higher than non-MENA regions. Control variables have the expected sign except gross tertiary enrolment; rents from natural resources and trade openness have insignificant signs.

[74] The coefficient of youth bulge + [(the coefficient of the joint effect)(3.890)(mean percentage of economic growth in non-MENA countries)= 0.071.

[75] One standard deviation increase in youth bulge is its coefficient in interaction term (0.071)*(6.743)(St. dev of youth bulge in non-MENA countries) =0.478 unit or 2% = (0.071*100)/(3.977)(St. dev of political instability in non-MENA countries).

Table 2.6 The Joint Effect of Economic Growth and Youth Bulge on Political Instability over the Period 1984-2013

Independent variables	Dependent variable: political instability				
	Model 19	Model 20	Model 21	Model 22	Model 23
YB	0.192*** (0.029)	0.185*** (0.037)	0.093 (0.065)	0.155*** (0.030)	0.211*** (0.029)
GDP growth	-0.640*** (0.207)	-0.714*** (0.222)	-0.624*** (0.215)	-0.578*** (0.205)	-0.606*** (0.188)
Youth bulge* GDP growth	-0.040** (0.067)	-0.051*** (0.019)	-0.038** (0.019)	-0.038** (0.016)	-0.036** (0.015)
OECD		-2.695*** (0.629)			
OCED*YB		-0.135** (0.056)			
OECD*YB*GDP growth		0.009 (0.006)			
Oil				-2.797*** (0.717)	
Oil*YB				-0.259*** (0.093)	
Oil*YB*GDP growth				0.009 (0.009)	
DD			-0.936** (0.462)		
DD*YB			0.094 (0.071)		
DD*YB*GDP growth			-0.001 (0.009)		
MENA					-4.082*** (1.876)
MENA*YB					-0.376 (0.263)
MENA*YB*GDP growth					-0.009 (0.037)
Constant	4.343*** (1.691)	3.758** (1.799)	4.294*** (1.207)	6.656*** (1.975)	6.720*** (1.638)
Adjusted R square	14%	13%	17%	16%	25%
Number of observation	617	617	625	590	617
Estimation method	2SLS	2SLS	2SLS	2SLS	2SLS
P-value	0	0	0	0	0
Number of instrument	1	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10 percent, 5 percent and 1 percent level, respectively. Variables included in model 2 are included in all models but the results not reported due to space restrictions.

2.8.2 The Joint Effect of Youth Unemployment and Youth Bulge on Political Instability

The role of youth bulge on political instability can be moderated by unemployment. In this section the joint effect between youth unemployment and youth bulge on political instability will be tested in different contexts similarly to the previously explored joint effect; the results are shown in Table 2.7.

Model 24 examines the impact of the joint effect of youth bulge and unemployment on instability in the panel data. The independent effect of youth bulge has a positive sign and significant coefficient at the 1% level, suggesting that increasing the percentage of youth bulge enhances political instability. Unexpectedly, the independent effect of youth unemployment has a negative sign although it is insignificant; it suggests that decreases in youth unemployment enhance political instability[76]. The joint effect has a negative sign and is significant at the 1% level, suggesting that a decrease in youth unemployment lower the political risk of youth bulge. In a country like Tunisia that has overthrown its dictatorship regime in late 2010, the interaction effect of youth unemployment at mean percentage of youth bulge 32.67% on instability is -3.861[77]. Instability is enhanced by 0.494 units or 92% of one standard deviation of instability for each one standard deviation reduction in youth unemployment[78]. The interaction effect of youth bulge at mean percentage of unemployment 3.429% on instability in Tunisia is -0.188. Decreasing youth bulge by one standard deviation enhances instability by 0.623 units or 4.5% of one standard deviation of instability[79].

Unemployment rates in some countries can be negatively associated with instability because the government creates public employment to absorb unemployment among youth that cannot be created by productive sectors driven by productivity considerations. This government action succeeds in eliminating the threat of unemployment on the political environment over the short term but it creates a risk of political instability over the long term because of financial pressure on public budgets or under provision on other sectors or increase in tax level. For example, the wage bill has had an adverse impact on Kuwait economic stability over the long run. Stability is threatened by the difficulty to meet the wage bill over a long period because of the possibility of sharp decreases in oil prices that forms the main source of government revenues in the country. Furthermore, the wage level in the government sector creates

[76] The model is re-estimated by including the quadratic term of youth unemployment; the linear and quadratic term have positive sign but insignificant. Furthermore, it is estimated by including interaction between quadratic term of youth bulge and unemployment; however, the linear and quadratic terms have negative sign. The results are not reported.

[77] The coefficient of youth unemployment + [(the coefficient of the joint effect)(32.67)(mean percentage of youth bulge in Tunisia)= -3.861.

[78] One standard deviation decrease in youth unemployment is its coefficient in interaction term (-3.861)*(0.128)(St. dev of youth unemployment in Tunisia) =0.494 unit or 92% = (3.861*100)/(4.187)(St. dev of political instability in Tunisia).

[79] The coefficient of youth bulge + [(the coefficient of the joint effect)(3.429)(mean percentage of youth unemployment in Tunisia)= -0.188. One standard deviation decreases in youth bulge is its coefficient in interaction term (-0.188)*(3.314)(St. dev of youth bulge in Tunisia) =0.623 unit or 4.5% = (-0.188*100)/(4.187)(St. dev of political instability in Tunisia).

pressure on the productivity sector to increase its level to be in line with its counterpart in the governmental sector. This reduces the ability of the sector to contribute to economic growth. Additionally, the government continues to satisfy public employees' demand for pay rises, which worsens the situation further (Westall and Hagagy, 2012).

It could be that in the case of Kuwait, the government succeeds in addressing unemployment over the short term at no expense to other sectors because of its wealth from oil revenues; however, in some countries with limited financial resources this might not be the case. Countries with limited financial resources might absorb unemployment through public employment at the expense of investment in sectors that feed economic growth (like infrastructure). Furthermore, they might succeed in absorbing unemployment among youth who are at working age at the expense of their ability to offer educational opportunities to members of the youth bulge who are ineligible to join the labor market, shifting the threat on political environment from unemployed youth to youth who experience difficulty in finding educational opportunities. Control variables have the expected significant sign except trade openness, level of democracy, urban growth rate and gross tertiary enrolment that have insignificant signs.

Model 25 examines the impact of the joint effect on political instability in OECD countries. The results indicate that youth bulge exposes lower political risk in OECD countries than non-OECD countries. The independent effect of youth unemployment enhances political instability, but it exposes higher risk in OECD countries than non-OECD countries as the interaction term between youth unemployment and OECD has a positive and significant sign at the 1% level.

The joint effect enhances political instability; however, it exposes higher political risk in OECD countries than non-OECD as the interaction term between OECD and the joint effect has a positive sign and is significant at the 1% level. In other words, unemployment enhances the role of youth bulge on political instability and the impact is higher in OECD than non-OECD countries. The interaction effect of youth unemployment (youth bulge) on political instability is higher in OECD countries than non-OECD. The interaction effect of youth unemployment at mean percentage of youth bulge 20.376% on instability in OECD countries is 2.583[80]. One standard deviation

[80] (The coefficient of youth unemployment + its coefficient in interaction with OECD dummy)+[(the coefficient of the joint effect + its coefficient in interaction with OECD dummy)(20.376)(mean percentage of youth bulge in OECD)= 2.583.

increase in youth unemployment at mean percentage of youth bulge enhances political instability in OECD countries by 1.454 units or 113% of one standard deviation of instability[81]. The interaction effect of youth bulge at mean percentage of youth unemployment 2.624% on instability in OECD countries is 0.294[82]. Youth bulge enhances instability by 1.408 units or 13% of one standard deviation of instability in OECD countries when they increase by one standard deviation at mean percentage of youth unemployment[83].

The role of youth bulge on political instability is enhanced by unemployment and such a role is higher in OECD countries than non-OECD countries. The failure of governments in OECD countries to reduce unemployment among youth directly enhances political instability. Furthermore, it enhances political instability indirectly by increasing the crime rate, which increases public anger towards a government for its failure to settle unemployment and its related crime rate issues. Control variables retain their sign and significance as captured in the previous model.

Model 26 examines the joint effect between youth bulge and unemployment on instability in oil countries. Oil and non-oil countries face the risk of youth bulge on the prevailing political environment; however, the risk is lower in oil than non-oil countries. Oil countries are at higher political risk from unemployment than non-oil countries as the interaction term between unemployment and oil dummy has a positive sign but is not significant.

The joint effect has a negative sign and is significant at the 1% level; however, its impact is higher in oil than non-oil countries as the interaction between the joint effect and oil dummy has negative sign but is insignificant. In other words, decreasing youth unemployment (youth bulge) enhances political instability and the effect is higher in oil than non-oil countries. The interaction effect of youth unemployment at mean percentage of youth bulge 30.955% on instability in oil countries is -3.91[84]. Reduction

[81] One standard deviation increase in youth unemployment is its coefficient in interaction term (2.583)*(0.563)(St.dev of youth unemployment in OECD) =1.454 unit or 113% = (2.583*100)/(2.280)(St. dev of political instability in OECD).

[82](The coefficient of youth bulge + its coefficient in interaction with OECD dummy)+[(the coefficient of the joint effect + its coefficient in interaction with OECD dummy)(2.624)(mean percentage of youth unemployment in OECD)= 0.294.

[83] One standard deviation increase in youth bulge is its coefficient in interaction term (0.294)*(4.784)(St. dev of youth bulge in OECD) =1.408 unit Or 13% = (0.294*100)/(2.280)(St. dev of political instability in OECD)

[84] (The coefficient of youth unemployment +its coefficient in interaction with oil dummy)+[(the coefficient of the joint effect + its coefficient in interaction with oil dummy)(30.955)(mean percentage of youth bulge in oil countries)= -3.915.

in unemployment by one standard deviation at mean percentage of youth bulge enhances instability in oil countries by 2.333 units or 96% of one standard deviation of instability[85]; in comparison with 2.033 units or 80% in non-oil countries[86]. The interaction effect of youth bulge at mean percentage of unemployment 2.7% on political instability in oil countries is -0.397[87]. One standard deviation decrease in youth bulge at mean percentage of unemployment enhances political instability in oil countries by 2.336 units or 10% of one standard deviation of instability[88]; in comparison with 0.983 units or 3.212% in non-oil countries[89].

It might be that oil countries use oil rents to create public employment and attract international investors through subsidized fuel prices to start up businesses in their jurisdiction. Such effort turns the risk of unemployment and youth bulge negative because of shortages in human resources required to sustain economic growth that might transfer the political risk to another source like increasing inflation rate. The adverse impact of its high rate abolishes government efforts to settle youth bulge and unemployment issues. In non-oil countries, full employment indicates that the government cannot increase the level of tax income while, government expenditure continue to grow. This creates financial pressure on governmental ability to respond to important segments of the public, which reduces its chances to be re-elected. Control variables have the expected significant sign except the level of democracy and urban growth rate that have an insignificant expected sign.

The impact of youth bulge that experience unemployment on instability is examined in democratic countries, with results shown in Model 27. Democratic countries face higher risk from youth bulge than autocratic countries. Similarly, the political risk of unemployment is higher in democratic than autocratic countries as the

[85] One standard deviation decrease in youth unemployment is its coefficient in interaction term (-3.915)*(0.596)(St. dev of youth unemployment in oil countries) =2.333 unit or 96% = (-3.915*100)/(4.072)(St. dev of political instability in oil countries).

[86] The coefficient of youth unemployment + [(the coefficient of the joint effect)(28.837)(mean percentage of youth bulge in non-oil countries)= -3.202. One standard deviation decreases in youth unemployment is its coefficient in interaction term (-3.202)*(0.632)(St. dev of youth unemployment in non-oil countries) =2.033 unit Or 80% = (3.202*100)/(3.985)(St. dev of political instability in non-oil countries).

[87] (The coefficient of youth bulge + its coefficient in interaction with oil dummy)+[(the coefficient of the joint effect+ its coefficient of interaction with oil dummy)(2.7)(mean percentage of youth unemployment in oil countries)= -0.397.

[88] One standard deviation decrease in youth bulge is its coefficient in interaction term (-.397)*(5.633)(St. dev of youth bulge in oil countries) =2.336 unit or 10% = (-0.397*100)/(4.072)(St. dev of political instability in oil countries).

[89]The coefficient of youth bulge + [(the coefficient of the joint effect)(2.736)(mean percentage of youth unemployment in non-oil countries)= -0.128. One standard deviation decreases in youth bulge is its coefficient in interaction term (-0.128)*(7.635)(St. dev of youth bulge in non-oil countries) =0.983 unit or 3% = (-0.128*100)/(3.985)(St. dev of political instability in non-oil countries)

interaction term between democracy and unemployment has a positive sign and is significant at the 1% level. Furthermore, the joint effect has a negative sign and is significant at the 5% level; however, its impact is lower in democratic than autocratic countries as the interaction term between democracy and the joint effect has a positive sign although it is not significant. In other words, autocratic countries succeed in turning the role of youth bulge moderated by unemployment on political instability into a negative; while democratic countries succeed in lowering its impact although some effects still exist. The empirical results reveal that the interaction effect of youth unemployment at mean percentage of youth bulge 23.463% on political instability in democratic countries is 0.434[90]. Political channels exist in democratic countries to enable youth to raise their demands peacefully but they are not enough to abolish the impact of unemployed youth on political instability. Increasing unemployment by one standard deviation at mean percentage of youth bulge escalates political instability in democratic countries by 0.251 units or 15% of one standard deviation of instability[91]. In contrast, in autocratic countries each one standard deviation decrease in youth unemployment at mean percentage of youth bulge 31.682% enhances political instability by 3.99 units or 124% one standard deviation of instability[92]. The interaction effect of youth bulge at mean percentage of unemployment 2.732% on political instability in democratic countries is 0.162[93]. One standard deviation increase in youth bulge at mean percentage of unemployment enhances political instability by 1.214 units or 5.5% of one standard deviation of political instability in democratic countries[94]. In contrast, the interaction effect of youth bulge is negatively associated with instability in autocratic countries; each one standard deviation reduction in youth bulge at mean percentage of unemployment 2.696% enhances instability by 2.103 units or 8.4% of one

[90] (The coefficient of youth unemployment + its coefficient in interaction with democracy)+[(the coefficient of the joint effect+ its coefficient in interaction with democracy)(23.463)(mean percentage of youth bulge in democratic countries)= 0.434.

[91] One standard deviation increase in youth unemployment is its coefficient in interaction term (0.434)*(0.578)(St. dev of youth unemployment in democratic countries) =0.251 unit or 15% = (0.434*100)/(2.948)(St. dev of political instability in democratic countries).

[92] The coefficient of youth unemployment + [(the coefficient of the joint effect)(31.682)(mean percentage of youth bulge in autocratic countries)= -5.402 .One standard deviation decreases in youth unemployment is its coefficient in interaction term (-5.402)*(0.740)(St. dev of youth unemployment in autocratic countries) =3.99 unit or 124% = (5.402*100)/(4.249)(St. dev of political instability in autocratic countries).

[93] (The coefficient of youth bulge +its coefficient in interaction with democracy)+[(the coefficient of the joint effect+ its coefficient in interaction with democracy)(2.732)(mean percentage of youth unemployment in democratic countries)= 0.162.

[94] One standard deviation increases in youth bulge is its coefficient in interaction term (0.162)*(7.510)(St. dev of youth bulge in democratic countries) =1.214 unit or 5.5% = (0.162*100)/(2.948)(St. dev of political instability in democratic countries).

standard deviation of instability in autocratic countries[95]. The positive sign of the joint effect in the democratic context can be explained in that some parties might use democratic channels to provoke unemployed youth against a government; such channels do not exist in autocratic countries. Control variables have the expected significant sign except trade openness, gross tertiary enrolment and urban growth rate.

Model 28 examines the impact of youth bulge on political instability in the MENA region through its interaction with unemployment. Youth bulge exposes lower risk on political environment in the MENA region as the interaction term between youth bulge and MENA has a negative sign and is significant at the 1% level. Youth unemployment exposes higher political risk in MENA than non-MENA regions as the interaction term between MENA and youth unemployment has a positive sign and is significant at the 1% level. Furthermore, youth bulge, through their interaction with unemployment, enhances political instability and the risk is higher in the MENA region as the interaction term between the joint effect and MENA region has a positive sign and significant coefficient at the 1% level. The interaction effect of youth unemployment at mean percentage of youth bulge 31.944% on instability in the region is 22.620[96]. Instability increases by 13 units or 518% of one standard deviation of political instability by each one standard deviation increase in unemployment in the region[97]; while in non-MENA regions reduction in unemployment by one standard deviation at mean percentage of youth bulge enhances instability by 0.089 units or 3.5% of one standard deviation of political instability[98]. The interaction effect of youth bulge at mean percentage of unemployment 3.049% on political instability in MENA is 1.291. Youth bulge increase by one standard deviation at mean percentage of unemployment enhances political instability in the region by 6 units or 30% of one standard deviation

[95] The coefficient of youth bulge + [(the coefficient of the joint effect)(2.696)(mean percentage of youth unemployment in autocratic countries)= -0.365. One standard deviation decreases in youth bulge is its coefficient in interaction term (-0.365)*(5.753)(St. dev of youth bulge in autocratic countries) =2.103 unit or 8.4% = (0.365*100)/(4.349)(St. dev of political instability in autocratic countries).

[96] (The coefficient of youth unemployment + its coefficient in interaction with MENA)+[(the coefficient of the joint effect + its coefficient in interaction with MENA)(31.944)(mean percentage of youth bulge in MENA countries)= 22.060.

[97] One standard deviation increase in youth unemployment is its coefficient in interaction term (22.060)*(0.562)(St. dev of youth unemployment in MENA countries) =13 unit or 518% = (22.060*100)/(4.366)(St. dev of political instability in MENA countries)

[98] The coefficient of youth unemployment + [(the coefficient of the joint effect)(29.034)(mean percentage of youth bulge in non-MENA countries)= -0.138. One standard deviation decreases in youth unemployment is its coefficient in interaction term (-0.138)*(0.642)(St. dev of youth unemployment in non-MENA countries) =0.089 unit or 3.5% = (0.138*100)/(3.977)(St. dev of political instability in non-MENA countries).

of political instability[99] in comparison with 1.117 units or 4% of one standard deviation of political instability in non-MENA regions[100].

Unemployment in the MENA region enhances the role of youth bulge on political instability because it prevents an individual from gaining access to some goods and services that require permanent income, like housing (Chaaban, 2013). Furthermore, in the absence of financial support for the unemployed an individual fails to achieve financial independency (Said, 1996). Control variables have the expected significant sign except natural resources rents, gross tertiary enrolment and urban growth rate.

[99] (The coefficient of youth bulge + its coefficient in interaction with MENA)+[(the coefficient of the joint effect+ its coefficient in interaction with MENA)(3.049)(mean percentage of youth unemployment in MENA countries)= 1.291. One standard deviation increases in youth bulge is its coefficient in interaction term (1.291)*(4.364)(St. dev of youth bulge in MENA countries) =5.637 unit or 30% = (1.291*100)/(4.366)(St. dev of political instability in MENA countries).

[100] The coefficient of youth bulge + [(the coefficient of the joint effect)(2.691)(mean percentage of youth unemployment in non-MENA countries)=0.165. One standard deviation increases in youth bulge is its coefficient in interaction term (0.165)*(6.743)(St. dev of youth bulge in non-MENA countries) =1.117 unit or 4% = (0.165*100)/(3.977)(St. dev of political instability in non-MENA countries).

Table 2.7 The Joint Effect of Youth Bulge and Unemployment on Political Instability over the Period 1984-2013

Independent variables	Dependent variable: political instability				
	Model 24	Model 25	Model 26	Model 27	Model 28
YB	0.189*** (0.029)	0.171*** (0.034)	0.164*** (0.030)	0.020 (0.058)	0.233*** (0.031)
TYU	-0.267 (0.351)	-0.769** (0.376)	-0.117 (0.366)	-0.872** (0.416)	0.587 (0.411)
YB*TYU	-0.110*** (0.032)	-0.132*** (0.039)	-0.107*** (0.034)	-0.143** (0.071)	-0.025 (0.037)
OECD		-1.030* (0.541)			
OCED*YB		-0.001 (0.050)			
OECD*TYU		2.395*** (0.657)			
OECD*TYU*YB		0.179*** (0.060)			
Oil			-1.881** (0.832)		
Oil*YB			-0.210** (0.084)		
Oil*TYU			0.226 (1.482)		
Oil*TYU*YB			-0.023 (0.213)		
DD				-0.582 (0.446)	
DD*YB				0.194*** (0.058)	
DD*TYU				1.752** (0.728)	
DD*TYU*YB				0.124 (0.085)	
MENA					-5.527*** (1.212)
MENA*YB					-0.737*** (0.185)
MENA*TYU					3.218*** (0.965)
MENA*YB*TYU					0.614*** (0.159)
Constant	4.719*** (1.203)	3.557*** (1.293)	6.745*** (1.413)	5.371*** (0.922)	7.773*** (1.335)
Adjusted R square	31%	33%	30.00%	36%	37%
Number of observation	617	617	590	625	617
Estimation method	2SLS	2SLS	2SLS	2SLS	2SLS
P-value	0	0	0	0	0
Number of instrument	1	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10 percent, 5 percent and 1 percent level, respectively. Variables included in model 2 are included in all models but the results not reported for space restrictions.

2.8.3 The Joint Effect Between the Level of Democracy and Youth Bulge on Political Instability

Empirical results estimated so far find that youth bulge enhances political instability in democratic countries, contrary to the expected. In this section the impact of the joint effect between level of democracy[101] and youth bulge on political instability is examined; results are shown in Table 2.8.

In Model 29 the impact of the joint effect between the level of democracy and youth bulge on political instability is examined in the panel data. The independent effect of the level of democracy has a negative sign although it is not significant, suggesting that decreasing the level of democracy enhances political instability. Youth bulge has the expected positive sign and is significant at the 5% level. The joint effect has a positive sign and is significant at the 10% level, suggesting that the interaction effect of youth bulge is more important than low level of democracy to destabilize the political environment. The interaction effect of the level of democracy at mean percentage of youth bulge 28% on instability in South Korea is 0.315[102]. Improving the level of democracy by one standard deviation at mean percentage of youth bulge enhances political instability in South Korea by 1.974 units or 19% of one standard deviation of political instability[103]. The interaction effect of youth bulge at mean score of the level of democracy 12.262 on political instability in South Korea is 0.275[104]. One standard deviation increase in youth bulge at mean score of the level of democracy enhances political instability by 1.548 units or 16% of one standard deviation of instability[105].

Modernization theory states that democracy produces stabilization when favorable factors are in place among other high level of educational attainment otherwise it lead to political instability (Huntington, 1968). However, in the absence of a high level of educational attainment it can be assumed that a country is not ready to adopt democracy. For example, descriptive statistics show that the score of democracy in Pakistan over the sample period is 13.129, higher than the average score of the entire

[101] It is measured on a scale from 1 to 21. The model is not estimated for fully democratic countries.
[102] The coefficient of the level of democracy + [(the coefficient of the joint effect)(28)(mean percentage of youth bulge in South Korea)=0.315.
[103] One standard deviation increase in the level of democracy is its coefficient in interaction term (0.315)*(6.265)(St. dev of the level of democracy in South Korea) =1.97 unit or 19% = (0.315*100)/(1.692)(St. dev of political instability in South Korea).
[104] The coefficient of youth bulge + [(the coefficient of the joint effect)(12.262)(mean score of the level of democracy in South Korea)=0.275.
[105] One standard deviation increase in youth bulge is its coefficient in interaction term (0.275)*(5.628)(St. dev of youth bulge in South Korea) =1.548 unit or 16% = (0.275*100)/(1.692)(St. dev of political instability in South Korea).

sample, which is 12.7; however, the level of democracy does not reduce the role of youth bulge on political instability in the country[106]. This is can be noted from its score of political instability which is higher than the entire sample[107]. It could be because the country average gross tertiary enrolment over the sample period is 5% in comparison to 27% in the entire sample.

Introducing democracy in countries that lack its requirements and at the same time have ethnic and religious diversity as well as a high percentage of youth bulge leads to political instability Lebanon, Iraq and Libya are cases in point. Hegre and Nome (2010) point out that when socioeconomic conditions are not suitable, introducing democracy may increase the risk of instability. They find a combination of high levels of development and democracy has a stabilization effect on political environment. Furthermore, they find that low-income democracies and low-income autocracies face the same risk of political instability. While this study does not rule out the fact that democracy might have a stabilization effect on political environment, it emphasizes that it can be introduced only when there is in place favorable economic and social environments. Empirically, the results are in line with the findings of Urdal (2006) that there is an insignificant negative relationship between the joint effect and the risk of armed conflict. Control variables have the expected significant sign except urban growth rate and gross tertiary enrolment.

Model 30 examines the impact of the joint effect between youth bulge and the level of democracy on instability in OECD countries. OECD countries face lower risk from youth bulge than non-OECD countries. The independent effect of democracy has a negative sign although it is not significant; however, its impact turns into a positive sign in OECD countries, as the interaction term between democracy and OECD is positive but not significant. This suggests that while a low level of democracy enhances instability in non-OECD countries, improvement in democracy enhances political instability in OECD countries. It could be that increasing the number of parties that form a parliament in OECD countries indicates that general agreement on public issues becomes more difficult to achieve.

The joint effect has a positive sign; however, it has a lower impact on political instability in OECD countries as the interaction term between OECD countries and the

[106] The average percentage of youth bulge in Pakistan is 34.5% in comparison with 28% for the entire sample.
[107] Average score of instability in Pakistan is 10 versus 7.58.

joint effect has a negative sign although it is not significant. In other words, the interaction effect of youth bulge is more important than low level of democracy to destabilize the political environment. The interaction effect of the level of democracy at mean percentage of youth bulge 20.376% on political instability in OECD countries is 0.109. One standard deviation increase in the level of democracy at mean percentage of youth bulge enhances political instability by 0.559 units or 5% of one standard deviation of political instability[108]; in comparison with 2.272 units or 9% in non-OECD countries[109]. The interaction effect of youth bulge at mean score of democracy 18.642 on instability in OECD countries is 0.190. Each one standard deviation increase in youth bulge at mean score of democracy enhances instability in OECD countries by 0.909 units or 8% of one standard deviation of instability[110]; in comparison with 1.554 units or 6.5% in non-OECD[111].

The empirical results suggest that OECD countries, which can be regarded as mature democracies, and non-OECD countries (which might be regarded as immature democracies) can both experience political instability; however, instability takes different forms between the two sub-samples. In democratic countries like OECD, incidences of political instability can take the form of riots, demonstrations and strikes, while in non-OECD countries where the score of democracy is low and the percentage of youth bulge is high, they might experience stronger forms of incidences such as coups and political assassinations[112]. Flanigan and Fogelman (1970) argue that there is variation in the form of political instability incidences across regions in the world. They point out that some regions in the world are more prone to specific forms of political

[108] (The coefficient of the level of democracy + its coefficient in interaction with OECD)+[(the coefficient of the joint effect + its coefficient of interaction with OECD)(20.376)(mean percentage of youth bulge in OECD countries)= 0.109. One standard deviation increase in the level of democracy is its coefficient in interaction term (0.109)*(5.458)(St. dev of the level of democracy in OECD countries) =0.599 unit or 5% = (0.109*100)/(2.280)(St. dev of political instability in OECD countries).

[109] The coefficient of the level of democracy + [(the coefficient of the joint effect)(30.765)(mean percentage of youth bulge in non-OECD countries)= 0.394. One standard deviation increase in the level of democracy is its coefficient in interaction term (0.394)*(5.768)(St. dev of the level of democracy in non-OECD countries) =2.272 unit or 9% = (0.394*100)/(4.185)(St. dev of political instability in non-OECD countries).

[110] (The coefficient of youth bulge + its coefficient in interaction with OECD)+[(the coefficient of the joint effect+ its coefficient of interaction with OECD)(18.642)(mean score of democracy in OECD countries)= 0.190. One standard deviation increase in youth bulge is its coefficient in interaction term (0.190)*(4.780)(St. dev of youth bulge in OECD countries) =0.909 unit or 8% = (0.190*100)/(2.280)(St. dev of political instability in OECD countries).

[111](The coefficient of youth bulge + [(the coefficient of the joint effect)(10.323)(mean score of democracy in non-OECD countries)= 0.249. One standard deviation increase in youth bulge is its coefficient in interaction term (0.249)*(5.628)(St. dev of youth bulge in non-OECD countries) =1.402 unit or 6% = (0.249*100)/(4.185)(St. dev of political instability in non-OECD countries).

[112] The measure of political instability in this research comprises small and large scale incidences of instability.

instability than others, indicating the case of Latin America where they are more prone to socio-political unrest than civil war, while the opposite holds in other regions like sub-Saharan Africa.

The prospective source of political instability between OECD and non-OECD countries may be different. The main source of instability in democratic countries is the failure of a government to protect the life and property of its citizenry. Failing to do so can spark less lethal, small-scale incidences of political instability than in autocratic countries (Hegre, 2014). In non-OECD countries, given they are neither consistent democracy nor autocracy this might suggest that the prospective source of political instability is immature democratic practices. Håvard Hegre et al. (2001) point out that moving from autocracy to democracy takes a long time and constitutes a substantial cost on the political environment. Control variables have the expected significant sign except youth unemployment, gross tertiary enrolment and urban growth rate.

Model 31 examines the impact of youth bulge on instability in oil countries through its interaction with the level of democracy. The independent impact of youth bulge exposes lower political risk in oil than non-oil countries as the interaction term between youth bulge and oil countries has a negative and significant sign at the 5% level. The independent effect of democracy has a negative sign although it is not significant; however, it turns into a positive impact in oil countries as the interaction term between oil and democracy has a positive sign and is significant at the 1% level. The joint effect has a positive sign and a higher impact in oil countries as the interaction term between oil and the joint effect has a positive and significant sign at the 1% level. In other words, the interaction effect of youth bulge is more important than low level of democracy to destabilize the political environment and such effect is substantially higher in oil than non-oil countries. The interaction effect of youth bulge at mean score of democracy 13.165 on political instability in non-oil countries is 0.183. Increasing youth bulge by one standard deviation at mean score of democracy enhances political instability in non-oil countries by 1.399 units or 5% of one standard deviation of instability[113]; in comparison with 1.272 units or 5.5% in oil countries[114]. The interaction

[113] The coefficient of youth bulge + [(the coefficient of the joint effect)(13.165)(mean score of democracy in non-oil countries)= 0.183. One standard deviation increase in youth bulge is its coefficient in interaction term (0.183)*(7.635)(St. dev of youth bulge in non-oil countries) =1.399 unit or 5% = (0.184*100)/(3.985)(St. dev of political instability in non-oil countries).

[114] (The coefficient of youth bulge + its coefficient in interaction with oil countries)+[(the coefficient of the joint effect+ its coefficient in interaction with oil countries)(7.211)(mean score of democracy in oil countries)= 0.225. One standard deviation increase in youth bulge is its coefficient in interaction term

effect of the level of democracy at mean percentage of youth bulge 28.837% on political instability in non-oil countries is -0.034. One standard deviation decrease in the level of democracy in non-oil countries at mean percentage of youth bulge decreases stability by 0.244 units or 1% of one standard deviation of stability[115]. In contrast, the improvement in the level of democracy at mean percentage of youth bulge 31% breeds instability in oil countries. One standard deviation increase in the level of democracy at mean percentage of youth bulge enhances instability by 9 units or 35% of one standard deviation of instability[116].

The positive association between the joint effect and political instability in oil and non-oil countries are driven by different factors. Introducing democracy in the presence of youth bulge enhances political instability in oil countries because it restricts government ability to use different strategies to stabilize the political environment and it provides public channels with which to replace a government for its failure to deal with economic and political dysfunctional under the resource curse[117]. Andersen and Aslaksen (2013) point out that a government in rentier states stabilizes its political environment through low taxation, distribution expenditure and patron-client networks between the political elite. Under a democracy, government cannot use oil rents to finance patron-client networks or allocate more funds to some segments that exclude others without risking its tenure in office. Furthermore, in the presence of a democracy, members of the public in oil countries are in a position to discipline a government in an election for its failure to address dysfunctional economic and political environments associated with the resource curse. Andersen and Aslaksen (2013) find that oil rents are associated with stability when measured by duration in office in non-democratic countries, but not in democracies. In the absence of patron client networks in democratic oil countries, the political elite might use democracies to pit youth bulge against a government. Andersen and Aslaksen (2013) point out that competition

(0.225)*(5.633)(St. dev of youth bulge in oil countries) =1.272 unit or 5.5% = (0.225*100)/(4.071)(St. dev of political instability in oil countries).

[115] The coefficient of the level of democracy + [(the coefficient of the joint effect)(28.836)(mean score of youth bulge in non-oil countries)= -0.034. One standard deviation decrease in the level of democracy is its coefficient in interaction term (0.034)*(7.110)(St. dev of the level of democracy in non-oil countries) =0.244 unit or 1% = (0.034*100)/(3.985)(St. dev of political instability in non-oil countries).

[116] (The coefficient of the level of democracy + its coefficient in interaction with oil)+[(the coefficient of joint effect+ its coefficient in interaction with oil)(31)(mean percentage of youth bulge in oil countries)= 1.415. One standard deviation increase in the level of democracy is its coefficient in interaction term (1.415)*(6.498)(St. dev of level of democracy in oil countries) =9 unit or 35% = (1.415*100)/(4.071)(St. dev of political instability in oil countries).

[117] The measure of political instability in this study has two components, namely government instability and internal conflict. Government instability comprises several components, including public support to government (among others).

between political elite to capture oil rents from holding public office reduces the incumbent period in office. In non-oil countries, given that the main source of government revenue is taxes and they have a higher score of democracy than oil countries, a government faces a higher risk of losing public support when it adopts policies that do not meet the needs of the majority of the public. Control variables have the expected significant sign except trade openness and urban growth rate.

Model 32 examines the impact of youth bulge on political instability in the MENA region through their interaction with the level of democracy. Youth bulge enhances political instability and their risk is higher in MENA than non-MENA regions as the interaction between MENA and youth bulge has a positive sign but is not significant. The independent effect of democracy has a negative sign and is significant at the 1% level; however, it exposes lower risk in MENA than non-MENA regions as the interaction term between MENA and democracy has a positive but not significant sign. In other words, a low level of democracy enhances instability and its impact is lower in MENA than non-MENA regions. The joint effect has a negative sign and is significant at the 10% level; however, it turns into positive impact on the MENA region as the interaction term between MENA and the joint effect has a positive sign and is significant at the 1% level. In MENA region, the interaction effect of youth bulge is more important than low level of democracy to destabilize the political environment. The interaction effect of youth bulge at mean score of democracy 5.489 on political instability in MENA is 0.913. Youth bulge enhances political instability through their interaction with democracy; one standard deviation increase in youth bulge at mean score of democracy escalates political instability in MENA by 4 units or 21% of one standard deviation of instability[118]; in comparison with 1.259 units or 5% in non-MENA regions[119]. The interaction effect of democracy at mean percentage of youth bulge 32% on instability in the MENA region is 3.207. Improvement in democracy by one standard deviation at mean percentage of youth bulge enhances political instability in MENA by

[118](The coefficient of youth bulge + its coefficient in interaction with MENA)+[(the coefficient of the joint effect+ its coefficient in interaction with MENA)(5.489)(mean score of democracy in MENA countries)= 0.913. One standard deviation increase in youth bulge is its coefficient in interaction term (0.914)*(4.364)(St. dev of youth bulge in MENA countries) =4 unit or 21% = (0.913*100)/(4.366)(St. dev of political instability in MENA countries).

[119] The coefficient of youth bulge + [(the coefficient of the joint effect)(12.269)(mean score of democracy in non-MENA countries)= 0.186. One standard deviation increase in youth bulge is its coefficient in interaction term (0.186)*(6.743)(St. dev of youth bulge in non-MENA countries) =1.259 unit or 5% = (0.186*100)/(3.977)(St. dev of political instability in non- MENA countries).

14 units or 74% of one standard deviation of instability[120]. In contrast, improvement in democracy in non-MENA regions lowers the adverse impact of youth bulge on political environment. Boosting democracy by one standard deviation at mean percentage of youth bulge 29.03% enhances stability in non-MENA regions by 3.657 units or 14% of one standard deviation of instability[121].

The empirical results suggest that the role of youth bulge on political instability in the MENA region is exaggerated by moving towards democracy. It might be that not all countries in the region have favorable socioeconomic conditions in order for democracy to produce stability as indicated by Hegre and Nome (2010). Descriptive analysis at country level in the MENA region shows that countries such as Qatar, Oman, Saudi Arabia and Bahrain that have the lowest score of democracy in the region are more stable than countries such as Algeria and Yemen that have higher scores in the level of democracy.

Alternatively, it enhances the role of youth bulge on political instability in the MENA region because the public does not possess a culture capable of accepting political settlement of conflicts associated with democracy and to respect its outcome. For example, a political agreement supported by the United Nation and Gulf Co-operation Council to settle conflict between different domestic interest parties in Yemen since late 2010 was violated and pushed these parties to violence in order to enforce a new political agreement.

Another channel that makes introducing democracy in the MENA region lead to instability is the presence of strong collectivism culture. An individual in the region has strong motivation to support his family or tribe members at the expense of the public interest. Under such conditions, democracy can be a source of instability because families or the tribe use it to show their superiority over other families or tribes. Control variables have the expected significant sign.

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[120] (The coefficient of the level of democracy + its coefficient in interaction with MENA)+[(the coefficient of the joint effect+ its coefficient in interaction with MENA)(32)(mean percentage of youth bulge in MENA countries)= 3.207. One standard deviation increase in the level of democracy is its coefficient in interaction term (3.207)*(4.304)(St. dev of level of democracy in MENA countries) =14 unit or 35% = (3.207*100)/(4.366)(St. dev of political instability in MENA countries).

[121] The coefficient of the level of democracy + [(the coefficient of the joint effect)(29.03)(mean percentage of youth bulge in non-MENA countries)= -0.563. One standard deviation decrease in the level of democracy is its coefficient in interaction term (0.563)*(6.492)(St. dev of the level of democracy in non-MENA countries) =3.657 unit or 14% = (0.563*100)/(3.977)(St. dev of political instability in non-MENA countries).

Table 2.8 The Joint Effect of Youth Bulge and Level of Democracy on Political Instability over the Period 1984-2013

Independent variable	Dependent variable: political instability			
	Model 29	Model 30	Model 31	Model 32
YB	0.127** (0.060)	0.115* (0.067)	0.157** (0.069)	0.332*** (0.063)
RT	-0.020 (0.048)	-0.006 (0.052)	-0.092 (0.058)	-0.215*** (0.056)
YB*RT	0.012* (0.006)	0.013 (0.008)	0.002 (0.008)	-0.012* (0.006)
OECD		-2.089*** (0.616)		
OCED*YB		-0.018 (0.089)		
OECD*RT		0.014 (0.087)		
OECD*YB*RT		-0.008 (0.012)		
Oil			-1.814*** (0.555)	
Oil*YB			-0.234** (0.098)	
Oil*RT			0.207*** (0.073)	
Oil*YB*RT			0.040*** (0.011)	
MENA				-4.150*** (0.757)
MENA*YB				0.025 (0.194)
MENA*RT				0.190 (0.119)
MENA*YB*RT				0.113*** (0.033)
Constant	3.100*** (1.116)	2.777** (1.196)	4.667*** (1.270)	3.893*** (1.011)
Adjusted R square	29%	31%	28%	38%
Number of observation	617	617	590	617
Estimation method	2SLS	2SLS	2SLS	2SLS
P-value	0	0	0	0
Number of instrument	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10 percent, 5 percent and 1 percent level, respectively. Variables included in model 2 are included in all models but the results are not reported for space restrictions.

2.8.4 The Joint Effect Between Educational Attainment and Youth Bulge on Political Instability

There is a little agreement on the impact of the independent effect of educational attainment measured by different proxies on political instability; the first stream finds a positive relationship while the second finds a negative association. In this section the role of youth bulge on political instability moderated by educational attainment measured by gross tertiary enrolment will be examined; the results are shown in Table 2.9.

In Model 33 the impact of youth bulge moderated by educational attainment on political instability is examined in the panel data. The independent effect of youth bulge enhances political instability as it has a positive sign and a significant coefficient at the 1% level. The independent effect of gross tertiary enrolment has a negative sign and is significant at the 1% level, suggesting that a low level of gross tertiary enrolment enhances political instability. The joint effect has a negative sign and is significant at the 1% level, suggesting that a low level of gross tertiary enrolment relieves the risk of youth bulge on the political environment. The interaction effect of youth bulge at mean percentage of gross tertiary enrolment 0.481% on political instability in Malawi is 0.239. Increasing the percentage of youth bulge by one standard deviation at mean percentage of gross tertiary enrolment enhances political instability in Malawi by 0.189 units or 7.5% of one standard deviation of instability[122]. The interaction effect of education at mean percentage of youth bulge 36% on political instability in Malawi is -0.149. Reducing educational attainment by one standard deviation at mean percentage of youth bulge enhances political instability by 0.014 units or 5% of one standard deviation of instability in Malawi[123].

It might be that youth bulge with a tertiary education set high expectations in term of employment and wages, which if not met, enhances instability (Collier, 2000) so that youth bulge without tertiary education have lower expectations. Similarly, a low level of gross tertiary enrolment does not create pressure on a government to introduce democracy, as suggested by Huntington (1968). Control variables have the expected significant sign except the level of democracy and urban growth rate.

Model 34 examines the impact of the joint effect between youth bulge and educational attainment on political instability in OECD countries. The independent effect of youth bulge enhances political instability; however, their political risk is lower in OECD countries than non-OECD countries. The independent effect of gross tertiary enrolment has a negative sign and is significant at the 5% level and its impact is slightly higher in OECD countries. The joint effect has a negative sign and is significant at the 1% level; however, its impact lower in OECD countries as the interaction term between

[122] The coefficient of youth bulge + [(the coefficient of the joint effect)(.481)(mean percentage of gross tertiary enrolment in Malawi)= 0.239. One standard deviation increases in youth bulge is its coefficient in interaction term (0.239)*(0.780)(St. dev of youth bulge in Malawi) =0.189 unit Or 7.5% = (0.239*100)/(3.173)(St. dev of political instability in Malawi).

[123] The coefficient of gross tertiary enrolment + [(the coefficient of the joint effect)(36)(mean percentage of youth bulge in Malawi)= -0.149. One standard deviation decreases in educational attainment is its coefficient in interaction term (0.149)*(.098)(St. dev of educational attainment in Malawi) =0.014 unit or 5% = (0.149*100)/(3.173)(St. dev of political instability in Malawi).

OECD and the joint effect has a positive sign although it is not significant. Put differently, a low level of gross tertiary enrolment reduces the role of youth bulge on political instability; however, the impact is lower in OECD than non-OECD countries. The interaction effect of youth bulge at mean percentage of educational attainment 40% on instability in OECD countries is 0.075. Increasing the percentage of youth bulge by one standard deviation at mean percentage of educational attainment enhances political instability in OECD countries by 0.358 units or 3% of one standard deviation of instability[124]; in comparison with 0.870 units or 4% of one standard deviation of political instability in non-OECD countries[125]. The interaction effect of education at mean percentage of youth bulge 20.736% on instability in OECD countries is -0.108. Reduction in educational attainment by one standard deviation at mean percentage of youth bulge enhances political instability in OECD countries by 2.432 units or 5% of one standard deviation of political instability[126]; in comparison with 3.077 units or 4% of one standard deviation of political instability in non-OECD countries[127].

The similarity in the impact of joint effect on instability between OECD countries and non-OECD countries may be because the education effect on political environment goes through different channels. In OECD countries decreases in gross tertiary enrolment reduces the level of government taxes that can be used to finance programs allocated to high dependency ratios in these countries. This is because education stabilizes the political environment through different channels among others increasing the level of taxes by stimulating economic growth (Thyne, 2006).

Alternatively, it might be that the level of gross tertiary enrolment is far below that required to sustain economic growth over the long run in OECD countries. Under

[124] (The coefficient of youth bulge + its coefficient in interaction with OECD)+[(the coefficient of the joint effect+ its coefficient in interaction with OECD)(40)(mean percentage of educational Attainment in OECD countries)= 0.076. One standard deviation increases in youth bulge is its coefficient in interaction term (0.076)*(4.784)(St. dev of youth bulge in OECD countries) =0.358 unit r 3% = (0.075*100)/(2.280)(St. dev of political instability in OECD countries).

[125] The coefficient of youth bulge + [(the coefficient of the joint effect)(16.747)(mean percentage of gross tertiary enrolment in non-OECD)= 0.154. One standard deviation increases in youth bulge is its coefficient in interaction term (0.154)*(5.628)(St. dev of youth bulge in non-OECD) =0.870 unit or 4% = (0.154*100)/(4.185)(St. dev of political instability in non-OECD).

[126] (The coefficient of gross tertiary enrolment + its coefficient in interaction with OECD)+[(the coefficient of the joint effect+ the coefficient of interaction with OECD)(20.376)(mean percentage of youth bulge in OECD countries)= -0.108. One standard deviation decrease in educational attainment is its coefficient in interaction term (-0.108)*(22.473)(St. dev of gross tertiary enrolment in OECD countries) =2.432 unit or 5% = (0.108*100)/(2.280)(St. dev of political instability in OECD countries).

[127] The coefficient of gross tertiary enrolment + [(the coefficient of the joint effect)(30.765)(mean percentage of youth bulge in non-OECD)= -0.165. One standard deviation decrease in educational attainment is its coefficient in interaction term (0.165)*(18.642)(St. dev of educational attainment in non-OECD) =3.077 unit Or 4% = (0.165*100)/(4.185)(St. dev of political instability in non-OECD).

such conditions, some OECD countries (such as Germany in 2015) import immigrants to substitute shortages in labor forces. This comes at a political cost like the rise of right wing parties because immigrants are generally seen to create pressure on socioeconomic environments like housing. In non-OECD countries it might be that the percentage of youth bulge who are school leavers exceeds the percentage enrolled in tertiary education. Hence, education fails to increase an opportunity cost to prevent incidences of political instability as suggested by the opportunity perspective. This is in line with projections made by modernization theorist Huntington (1968) that education enhances political stability in countries with favorable economic condition because it increases an individual's aspirations and expectations. Control variables have the expected significant sign except democracy, trade openness and urban growth rate.

Model 34 examines another perspective channel that might moderate the role of youth bulge on political instability in oil countries through interaction with education. The independent effect of youth bulge enhances political instability; but it exposes lower risk in oil than non-oil countries. The independent effect of gross tertiary enrolment has a negative sign; however, it constitutes lower risk in oil countries than non-oil as the interaction between oil and gross tertiary education has a positive sign although it is not significant. In other words, a low level of gross tertiary enrolment enhances political instability and the risk is lower in oil than non-oil countries. The joint effect has a negative sign but it becomes positive on political instability in oil countries as the interaction term between oil and the joint effect has a positive yet insignificant sign. In other words, a low level of gross tertiary enrolment lowers the impact of youth bulge on political instability in non-oil countries; while high levels enhance the role of youth bulge in oil countries. The interaction effect of youth bulge at mean percentage of educational attainment 17.983% on political instability in oil countries is -0.064. Decreasing youth bulge by one standard deviation at mean percentage of gross tertiary enrolment enhances political instability in oil countries by 0.361 units or 1.5% of one standard deviation of instability[128]. The negative sign in the joint effect lowers the impact of youth bulge on political instability in non-oil countries; however, they continue to pose risk to the political environment. The interaction effect of youth bulge at mean percentage of gross tertiary enrolment 23.72% on instability in non-oil

[128](The coefficient of youth bulge + its coefficient in interaction with oil dummy)+[(the coefficient of the joint effect+ the coefficient of interaction with oil dummy)(17.983)(mean percentage of educational attainment in oil countries)= -0.064. One standard deviation decrease in youth bulge is its coefficient in interaction term (0.064)*(5.633)(St.dev of youth bulge in oil countries) =0.361 unit Or 1.5% = (0.064*100)/(4.071)(St. dev of political instability in oil countries).

countries is 0.135. One standard deviation increase in youth bulge at mean percentage of gross tertiary enrolment escalates political instability in non-oil countries by 1.032 units or 3.4% of one standard deviation of instability[129]. The interaction effect of education at mean percentage of youth bulge 31% on instability in oil countries is 0.105. Each one standard deviation increase in education at mean percentage of youth bulge feeds instability by 1.840 units or 2.6% of one standard deviation of political instability in oil countries[130]. The interaction effect of education at mean percentage of youth bulge 28.84% on instability in non-oil countries is -0.170. Reduction in gross tertiary enrolment by one standard deviation at mean percentage of youth bulge enhances instability by 3.919 units or 4% of one standard deviation of instability[131].

The positive association between the joint effect and political instability in oil countries can be attributed to imbalance between demand and supply in labor markets and the effect of the Dutch disease. As suggested by rentier state theory, these countries expand educational opportunities to stabilize the political environment; however, the number of educated youth exceeds the number of available employment opportunities. For example, Saudi Arabia and Iran are among the oil countries that achieved the highest level of gross tertiary enrolment, at 22% and 28% respectively. However, this high level does not reduce the political risk in these countries as it remains high in Saudi Arabia (around 7) and in Iran (around 9) over the entire sample period (the average in oil countries is 7.5). It could be that while educational level improves, labor markets are not rewarded[132]. These countries face a risk of political instability from educated youth who experience difficulty in joining the labor market in line with projections by modernization theorist Huntington (1968), who attributes instability to the failure of the labor market to absorb an increasing number of educated youth bulge. Lack of diversification in economic activities in oil countries (as suggested by the Dutch disease model) that can accommodate different structures of educational attainment, in addition

[129]The coefficient of youth bulge + [(the coefficient of the joint effect)(23.719)(mean percentage of gross tertiary enrolment in non-oil countries)= 0.135. One standard deviation increase in youth bulge is its coefficient in interaction term (0.135)*(7.635)(St. dev of youth bulge in non-oil countries) =1.032 unit or 3.4% = (0.135*100)/(3.985)(St. dev of political instability in non-oil countries).

[130](The coefficient of gross tertiary enrolment + its coefficient in interaction with oil dummy)+[(the coefficient of the joint effect+ its coefficient of interaction with oil dummy)(31)(mean percentage of youth bulge in oil countries)= 0.105. One standard deviation increase in educational attainment is its coefficient in interaction term (0.105)*(17.528)(St. dev of gross tertiary enrolment in oil countries) =1.840 unit or 2.6% = (0.105*100)/(4.071)(St. dev of political instability in oil countries).

[131] The coefficient of gross tertiary enrolment + [(the coefficient of the joint effect)(28.84)(mean percentage of youth bulge in non-oil countries)= -0.170. One standard deviation decrease in educational attainment is its coefficient in interaction term (0.170)*(23.007)(St. dev of educational attainment in non-oil countries) =3.919 unit or 4% = (0.170*100)/(3.985)(St.dev of political instability in non-oil).

[132] Youth unemployment in Iran is 23% and in Saudi Arabia is 28% in comparison with 17.7% in oil countries.

to reliance on capital-intensive projects that require highly qualified human resources exaggerates the risk of highly educated youth on political environments in oil countries because (as suggested by opportunity perspective) these have low opportunity cost.

The negative relationship between the joint effect and political instability in non-oil countries can be explained in that the level of education is insufficient to assist a government plan to increase its revenue or cut its expenditure; which in turn enhances political instability. In non-oil countries where taxes are the main source of government revenue public support is highly required to pass bills. Ritzen, Easterly, and Woolcock (2000) argue that an educated population are more likely to accept policy reform because they understand that the short term cost will be offset by benefits attained over the long run. Education increases government revenue and provides it with the necessary financial resources to defend anti-government movements. Thyne (2006) argues that wealth brought by education increases the level of taxes so that a government has financial resources to increase an individual's opportunity cost to commit violence by outspending anti-government movements. Control variables have the expected significant sign except level of democracy and urban growth rate.

Model 35 examines the impact of the joint effect between youth bulge and gross tertiary enrolment on political instability in democratic countries. Democratic countries are at higher political risk from youth bulge than autocratic countries. The independent effect of gross tertiary enrolment enhances political instability but its impact turns positive in democratic countries as the interaction term between democracy and gross tertiary enrolment has a positive sign and is significant at the 1% level. Democratic countries are at higher risk from increasing gross tertiary enrolment than autocratic countries. The joint effect has a negative sign although it is not significant; yet it exposes lower risk in democratic than autocratic countries as the interaction term between democracy and the joint effect has a positive insignificant sign. Put differently, a low level of gross tertiary enrolment lowers the role of youth bulge on political instability and the effect is lower in democratic than autocratic countries. The interaction effect of youth bulge at mean percentage of gross tertiary enrolment 40% on instability in democratic countries is 0.225. Youth bulge feeds political instability in democratic countries; one standard deviation increase in youth bulge at mean percentage of gross tertiary enrolment enhances political instability in democratic

countries by 1.689 units or 7.6% of one standard deviation of political instability[133]. The interaction effect of youth bulge has a negative sign with political instability in autocratic countries; their interaction effect at mean percentage of gross tertiary enrolment 15.876% on instability is -0.208. For each one standard deviation reduction in the percentage of youth bulge at mean percentage of gross tertiary enrolment instability in autocratic countries, there is an enhancement of 1.199 units or 5% of one standard deviation of instability[134]. The interaction effect of education at mean percentage of youth bulge 23.463% on political instability in democratic countries is -0.014. One standard deviation decrease in gross tertiary enrolment at mean percentage of youth bulge enhances political instability in democratic countries by 0.333 units or 0.5% of one standard deviation of instability[135]; in comparison with 4.579 units or 6.5% in autocratic countries[136].

The effect of education dominates the impact of the joint effect in autocratic countries the failure of government to increase educational opportunities at university level has direct and indirect impacts on the role of youth bulge on the prevailing political environment. Directly, autocratic regimes are interested in gaining support from segments that make up a significant percentage of the population as indicated by Brown and Hunter (2004), as is the case in autocratic countries where the percentage of youth bulge is higher than 30% of the population. Furthermore, expansion of education (all other things constant) satisfies some aspirations of the individual (Huntington, 1968). Indirectly, it increases prospective income and employment opportunities available to youth bulge in the future; consequently, it decreases an individual's

[133] (The coefficient of youth bulge + its coefficient in interaction with democratic dummy)+[(the coefficient of the joint effect + its coefficient in interaction with democratic dummy)(40)(mean percentage of educational attainment in democratic countries)= 0.225. One standard deviation increase in youth bulge is its coefficient in interaction term (0.225)*(7.511)(St. dev of youth bulge in democratic countries) =1.689 unit or 7.6% = (0.225*100)/(2.948)(St. dev of political instability in democratic countries).

[134] The coefficient of youth bulge + [(the coefficient of the joint effect)(15.876)(mean percentage of gross tertiary enrolment in autocratic countries)= -0.208. One standard deviation decrease in youth bulge is its coefficient in interaction term (-0.208)*(5.754)(St. dev of youth bulge in autocratic countries) =1.199 unit Or 5% = (0.208*100)/(4.349)(St. dev of political instability in autocratic countries).

[135] (The coefficient of gross tertiary enrolment + its coefficient in interaction with democratic dummy)+[(the coefficient of the joint effect+ its coefficient in interaction with democratic dummy)(23.463)(mean percentage of youth bulge in democratic countries)= -0.014. One standard deviation decrease in educational attainment is its coefficient in interaction term (-0.014)*(23.825)(St. dev of gross tertiary enrolment in democratic countries) =0.333 unit or 0.5% = (0.014*100)/(2.948)(St. dev of political instability in democratic countries).

[136] The coefficient of gross tertiary enrolment + [(the coefficient of the joint effect)(31.682)(mean percentage of youth bulge in autocratic countries)= -0.281. One standard deviation decrease in educational attainment is its coefficient in interaction term (-0.281)*(16.313)(St. dev of educational attainment in autocratic countries) =4.579 unit or 6.5% = (0.281*100)/(4.349)(St. dev of political instability in autocratic countries).

opportunity cost. Descriptive statistics of autocratic country Haiti show that its average gross tertiary enrolment over the sample period is 1% and its percentage of youth bulge is 34%. Haiti has a significantly less stable political environment (average score of 12.5 in comparison to the average score in autocratic countries of 8.3).

In democratic countries, low educational opportunities can enhance the role of youth bulge on instability. Brown and Hunter (2004) point out that governments in democratic countries come under pressure to increase resources available for higher education institutions. The authors concluded that governments are more responsive to demands raise by higher education institutions compared to other educational levels in democratic countries because lobbying group are more organized and have expert knowledge. Control variables have the expected significant sign except trade openness and urban growth rate.

Model 38 investigates the impact of youth bulge moderated by gross tertiary enrolment on political instability in the MENA region. Youth bulge exposes higher political risk in non-MENA than the MENA region. The independent effect of gross tertiary enrolment has a negative sign and is not significant; however, it exposes higher risk in MENA than non-MENA regions as the interaction effect between MENA and gross tertiary enrolment has a negative sign but is not significant. Put differently, a low level of gross tertiary enrolment enhances political instability and the impact is higher in the MENA than non-MENA regions. The joint effect has a negative sign and is significant at the 10% level; however, it turns to a positive impact in the MENA region as the interaction term between MENA and the joint effect has a positive sign and is significant at the 1% level. In other words, a high level of gross tertiary enrolment enhances the role of youth bulge on political instability in the MENA region, while in non-MENA a low level reduces their role on political instability. The interaction effect of youth bulge at mean percentage of gross tertiary enrolment 15.579% on political instability on the MENA region is 0.329. Each one standard deviation increase in youth bulge at mean percentage of gross tertiary enrolment enhances political instability in MENA region by 1.435 units or 7.5% of one standard deviation of instability[137]; in comparison with 1.436 units or 5% of one standard deviation of instability in non-

[137] (The coefficient of youth bulge + its coefficient in interaction with MENA dummy)+[(the coefficient of the joint effect+ its coefficient in interaction with MENA dummy)(15.579)(mean percentage of educational attainment in MENA countries)= 0.329. One standard deviation increase in youth bulge is its coefficient in interaction term (0.329)*(4.364)(St. dev of youth bulge in MENA countries) =1.435 unit or 7.6% = (0.329*100)/(4.366)(St. dev of political instability in MENA countries).

MENA[138]. The interaction effect of gross tertiary enrolment at mean percentage of youth bulge 32% on political instability in the MENA region is 1.136. Each one standard deviation increase in gross tertiary enrolment at mean percentage of youth bulge enhances political instability in MENA region by 13.588 units or 26% of one standard deviation of political instability[139]. In contrast, the interaction effect of gross tertiary enrolment at mean percentage of youth bulge 22.528% on political instability in non-MENA region is -0.082. Each one standard deviation decrease in gross tertiary enrolment at mean percentage of youth bulge enhances political instability in non-MENA countries by 1.847 units or 2% of one standard deviation of instability[140].

The positive relationship between the joint effect and political instability in the MENA region could be attributed to several reasons. Education increases an individual's expectations in term of income and employment opportunities; however, labor markets may not be rewarding (Collier, 2000). This is because of a skills mismatch between skills attained and skills required by the labor market. Huntington (1968) points out that education has a destabilization effect on the political environment when the supply of educated youth exceeds the demand of the labor market or there exists such a skill mismatch. Pissarides and Véganzonès-Varoudakis (2006) point out that the educational system in the MENA region is geared towards satisfying public sector needs; consequently, it increases pressure on educational institutions and an increasing number of youth who are queuing for employment in the sector. Furthermore, in the absence of political channels that might offer a release of the political risk of youth bulge, it is expected that the political situation will only become more exaggerated. Ross et al (2011) point out that a high level of educational attainment enhances political awareness among youth; however, institutional structure is not developed enough to accommodate such a change, in line with projections made by modernization theorist Huntington (1968). Control variables have the expected significant sign except rents from natural resources and urban growth rate.

[138] The coefficient of youth bulge + [(the coefficient of the joint effect)(22.478)(mean percentage of gross tertiary enrolment in non-MENA countries)= 0.213. One standard deviation increase in youth bulge is its coefficient in interaction term (0.213)*(6.743)(St. dev of youth bulge in non-MENA countries) =1.436 unit or 5% = (0.213*100)/(3.977)(St. dev of political instability in non-MENA countries).

[139](The coefficient of gross tertiary enrolment + its coefficient in interaction with MENA dummy)+[(the coefficient of the joint effect+ its coefficient in interaction with MENA dummy)(32)(mean percentage of youth bulge in MENA countries)= 1.136. One standard deviation increase in educational attainment is its coefficient in interaction term (1.136)*(11.962)(St. dev of gross tertiary enrolment in MENA countries) =1.136 unit or 26% = (1.136*100)/(4.366)(St. dev of political instability in MENA countries).

[140] The coefficient of gross tertiary enrolment + [(the coefficient of the joint effect)(29)(mean percentage of youth bulge in non-MENA countries)= -0.082. One standard deviation decrease in educational attainment is its coefficient in interaction term (-0.082)*(22.528)(St. dev of educational attainment in non-MENA countries) =1.847 unit or 2% = (-0.082*100)/(3.977)(St. dev of political instability in non-MENA countries).

Table 2.9 The Joint Effect of Youth Bulge and Gross Tertiary Enrolment on Political Instability over the Period 1984-2013

Independent variables	Dependent variable				
	Model 33	Model 34	Model 35	Model 36	Model 37
YB	0.241*** (0.030)	0.205*** (0.033)	0.230*** (0.034)	-0.129 (0.085)	0.258*** (0.031)
GTE	-0.041*** (0.015)	-0.042** (0.016)	-0.054*** (0.017)	-0.153*** (0.025)	-0.025 (0.016)
YB*GTE	-0.003*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.005 (0.005)	-0.002* (0.001)
OECD		-1.524*** (0.418)			
OCED*YB		-0.043 (0.040)			
OECD*GTE*YB		0.0008 (0.002)			
Oil			-2.175*** (0.782)		
Oil*YB			-.384** (0.156)		
Oil*GTE			0.005 (0.102)		
Oil*GTE*YB			0.009 (0.009)		
DD				-1.190** (0.530)	
DD*YB				0.394*** (0.095)	
DD*GTE				0.162*** (0.032)	
DD*GTE*YB				0.004 (0.004)	
MENA					-3.039** (1.216)
MENA*YB					-0.552*** (0.160)
MENA*GTE					-0.119 (0.077)
MENA*GTE*YB					0.042*** (0.014)
Constant	2.693* (1.396)	1.479 (1.478)	3.830** (1.549)	4.479*** (1.088)	5.099*** (1.392)
Adjusted R square	31%	34%	30%	38%	39%
Number of observation	617	617	590	625	617
Estimation method	2SLS	2SLS	2SLS	2SLS	2SLS
P-value	0	0	0	0	0
Number of instrument	1	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10 percent, 5 percent and 1 percent level, respectively. Variables included in model 2 are included in all models but the results not reported for space restrictions.

2.8.5 The Joint Effect Between Rents from Natural Resources and Youth Bulge on Political Instability

In this section the impact of the joint effect between youth bulge and rents from natural resources on political instability is examined; results are shown in Table 2.10[141].

Model 38 examines the joint effect between rents from natural resources and youth bulge on political instability in the panel data. The independent effect of youth bulge has the expected positive sign and is significant at the 1% level. The independent effect of rents from natural resources has a negative sign and is significant at the 1% level, suggesting that a low level of rents from natural resources enhances political instability. The joint effect has a negative sign and is significant at the 1% level, suggesting the interaction effect of rent from natural resources is more important than high percentage of youth bulge to destabilize the political environment. The interaction effect of youth bulge at mean percentage of rents from natural resources 43.11% on political instability in Saudi Arabia is -0.234. One standard deviation decrease in youth bulge at mean percentage of rents from natural resources enhances political instability in Saudi Arabia by 0.483 units or 8% of one standard deviation of instability[142]. Rents from natural resources in one of the major exporters of crude oil in the world turns the threat of youth bulge on stability into a negative, while countries poor in natural resources like Lebanon fail to do so. In Lebanon, the interaction effect of youth bulge at mean percentage of natural resources 0.018% is 0.153. Each one standard deviation increase in youth bulge at mean percentage of natural resources 0.0185% enhances political instability by 0.422 units or 2.5% of one standard deviation of instability[143]. The interaction effect of rents from natural resources at mean percentage of youth bulge 31% on political instability in Saudi Arabia is -0.329. Each one standard deviation decrease in rents from natural resources at mean percentage of youth bulge 31% enhances political instability in Saudi Arabia by 4.776 units or 12% of one standard

[141] Model is not estimated for democratic countries and OECD because rents from natural resources are negligent.

[142] The coefficient of youth bulge + [(the coefficient of the joint effect)(43.11)(mean percentage of rents from natural resources in Saudi Arabia)= -0.234. One standard deviation decrease in youth bulge is its coefficient in interaction term (-0.234)*(2.068)(St. dev of youth bulge in Saudi Arabia) =0.483 unit or 8% = (0.234*100)/(2.803)(St. dev of political instability in Saudi Arabia).

[143] The coefficient of youth bulge + [(the coefficient of the joint effect)(0.0185)(mean percentage of rents from natural resources in Lebanon)= 0.153. One standard deviation increase in youth bulge is its coefficient in interaction term (0.153)*(2.744)(St. dev of youth bulge in Lebanon) =0.422 unit or 2.5% = (0.153*100)/(6.053)(St. dev of political instability in Lebanon).

deviation of political instability[144]; in comparison with 0.007 units or 5% in Lebanon[145]. The results are in line with projections made by rentier state theory that the direct and indirect distribution channels help a government to eliminate the risk of two typical sources of political instability incidences: rivals in the political system and mass anti-government movements (De Mesquita and Smith, 2009). The research does not identify which distribution channels lead to stability because it is beyond the scope of this research objective. Control variables have a significant sign except the level of democracy, gross tertiary enrolment and urban growth rate.

Model 39 examines the impact of the joint effect between rents from natural resources and youth bulge on instability in MENA region. Youth bulge exposes higher political risk in non-MENA than the MENA region. The independent effect of rents of natural resources has a negative insignificant sign and it exposes higher risk in MENA than non-MENA regions as the interaction term between MENA and rents has negative sign although it is not significant; suggesting the stabilization effect of rents from natural resources is higher in MENA than non-MENA regions. The joint effect has a negative sign although it is not significant; however, it has a positive impact on political instability in the MENA region as the interaction term between the joint effect and MENA has a positive sign but is not significant. The interaction effect of youth bulge at mean percentage of natural resources 24.66% on political instability in MENA is -0.276. Decreasing youth bulge at mean percentage of rents from natural resources enhances political instability in MENA by 1.208 units or 6% of one standard deviation of instability[146]. In contrast, the interaction effect of youth bulge at mean percentage of natural resources 8.582% on instability in non-MENA region is 0.228. One standard deviation increase in youth bulge at mean percentage of rents from natural resources enhances instability by 1.541 units or 6% of one standard deviation of instability[147]. The

[144] The coefficient of rents from natural resources + [(the coefficient of the joint effect)(31)(mean percentage of youth bulge in Saudi Arabia)= -0.329. One standard deviation decrease in rents from natural resources is its coefficient in interaction term (-0.329)*(14.493)(St. dev of rents from natural resources in Saudi Arabia) =4.776 unit Or 12% = (0.329*100)/(2.803)(St. dev of political instability in Saudi Arabia).

[145] The coefficient of rents from natural resources + [(the coefficient of the joint effect)(29.335)(mean percentage of youth bulge in Lebanon)= -0.315. One standard deviation decrease in rents from natural resources is its coefficient in interaction term (-0.315)*(0.023)(St. dev of rents from natural resources in Lebanon) =0.007 unit or 5% = (0.315*100)/(6.053)(St. dev of political instability in Lebanon).

[146](The coefficient of youth bulge + its coefficient in interaction with MENA dummy)+[(the coefficient of the joint effect+ its coefficient in interaction with MENA dummy)(24.66)(mean percentage of rents from natural resources in MENA countries)= -0.276. One standard deviation decrease in youth bulge is its coefficient in interaction term (-0.276)*(4.364)(St. dev of youth bulge in MENA countries) =1.208 unit or 6% = (-0.276*100)/(4.366)(St. dev of political instability in MENA countries).

[147]The coefficient of youth bulge + [(the coefficient of the joint effect)(8.582)(mean percentage of rents from natural resources in non-MENA countries)= 0.228. One standard deviation increase in youth bulge

interaction effect of rents from natural resources at mean percentage of youth bulge 32% on political instability in MENA is 2.763. One standard deviation increase in rents from natural resources at mean percentage of youth bulge enhances political instability by 2.763 units or 3% of one standard deviation of instability[148]; whereas in non-MENA regions each one standard deviation decrease in rents from natural resources at mean percentage of youth bulge enhances instability by 0.315 units or 0.6% of one standard deviation of instability[149].

The positive sign of the joint effect in the MENA region might be driven by corruption. As rents from natural resources increase, the level of corruption similarly increases. This lead to youth bulge in the region believing that what they receive from their government less than what they deserve. Hence, they might react violently to enforce a pattern of income distribution that achieves more income equality. Control variables have a significant sign except urban growth rate and gross tertiary enrolment.

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is its coefficient in interaction term (0.228)*(6.743)(St. dev of youth bulge in non-MENA countries) =1.541 unit or 6% = (0.228*100)/(3.977)(St. dev of political instability in non-MENA countries).

[148] (The coefficient of rents from natural resources + its coefficient in interaction with MENA dummy)+[(the coefficient of the joint effect+ its coefficient in interaction with MENA dummy)(32)(mean percentage of youth bulge in MENA countries)= 0.137. One standard deviation increase in rents is its coefficient in interaction term (0.137)*(20.138)(St. dev of rents from natural resources in MENA countries) =2.763 unit or 3% = (0.137*100)/(4.366)(St. dev of political instability in MENA countries).

[149] The coefficient of rents from natural resources +[(the coefficient of the joint effect (29)(mean percentage of youth bulge in non-MENA countries)= -0.024. One standard deviation decrease in rents is its coefficient in interaction term (0.024)*(13.343)(St. dev of rents from natural resources in non-MENA countries) =0.315 unit or 0.6% = (0.024*100)/(3.977)(St. dev of political instability in non-MENA countries).

Table 2.10 The Joint Effect of Youth Bulge and Rents from Natural Resources on Political Instability over the period 1984-2013

Independent variables	Dependent variable: political instability	
	Model 38	Model 39
YB	0.154*** (0.034)	0.232*** (0.035)
Rents	-0.051*** (0.015)	-0.012 (0.022)
YB*Rents	-0.009*** (0.003)	-0.0004 (0.003)
MENA		-2.973** (1.234)
MENA*YB		-0.647*** (0.277)
MENA*Rents		-0.031 (0.034)
MENA*YB*Rents		0.006 (0.007)
Constant	2.914** (1.389)	5.437*** (1.427)
Adjusted R square	30%	37%
Number of observation	617	617
Estimation method	2SLS	2SLS
P-value	0	0
Number of instrument	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10 percent, 5 percent and 1 percent level, respectively. Variables included in model 2 are included in all models but the results not reported for space restrictions

2.9 Sensitivity Analysis

The final models estimated using the panel data set will be re-estimated using fixed effect (period effect) and an alternative proxy of political instability used by Saha and Yap (2013) as outlined earlier. The final models of the panel data set that will be re-estimated are Model 2 that investigates the independent effect of youth bulge on political instability; Model 19 that examines the joint effect of youth bulge and economic growth on political instability; Model 24 that tests the joint effect of youth bulge and unemployment on political instability; Model 29 that explores the joint effect of youth bulge and the level of democracy on political instability; Model 33 that investigates the impact of youth bulge on political instability moderated by educational attainment; and Model 38 that tests the role of youth bulge on political instability moderated by rents from natural resources. The results are shown in the appendix.

Model 2 tests the first hypothesis that countries experiencing a high percentage of youth bulge are more likely to experience political instability than countries that do not, ceteris paribus. The independent effect of youth bulge retains its sign and significance under fixed effect and an alternative proxy of political instability.

Similarly, the coefficient of the control variables, while showing variation under alternative estimation techniques and the alternative proxy of political instability, they retain their sign and significance captured in Model 2.

Model 19 examines the second hypothesis that the higher the economic growth in a country, the lower the impact of youth bulges on political instability. It retains its sign and significance in the fixed effect model and only retains its sign under the alternative proxy of political instability. The independent effect of economic growth and youth bulge has the expected significant sign in both models. The sign and significance of control variables are consistent across the three models except youth unemployment (that becomes insignificant with the expected positive sign under the alternative proxy of political instability model) and level of democracy (that yields a significant expected negative significant sign in the fixed effect model).

Model 24 investigates the third hypothesis that assumes the higher the rate of youth unemployment in countries, the stronger the impact of youth bulge on instability, ceteris paribus. It retains its sign and significance only in the fixed effect model and retains its sign only in the model of the alternative proxy of political instability. The independent effect of youth bulge and youth unemployment retains its sign and significance in the fixed effect model and unemployment becomes insignificant with an expected positive sign under the model of alternative proxy of political instability. Most of the control variables show no variation either in sign or significance across the three models.

Model 29 examines the fourth hypothesis that assumes the higher the level of democracy in countries, the lower the impact of youth bulge on instability. The model retains its sign and significance under alternative estimation techniques and the alternative definition of political instability. The independent effect of the level of democracy retains its sign and significance under the fixed effect model, but under the alternative proxy of political instability it turns into an insignificant positive sign. Overall, control variables are resilient to change to both estimation method and alternative proxy.

The role of youth bulge on political instability moderated by the level of educational attainment (as set out in the fifth hypothesis) is tested in Model 33. The hypothesis assumes that the higher the level of educational attainment, the stronger the impact of youth bulges on instability. The joint effect between the two variables and

their independent effect retain their sign and significance across models. Control variables have a similar sign and significance across the three models.

Model 38 tests the sixth hypothesis that assumes that the higher the rents from natural resources, the lower the impact of youth bulge on instability. The joint effect between the two variables and their independent effect retain their sign and significance across the three models. Control variables show stability in sign and significance across the three models except for the level of democracy, urban growth rate and gross tertiary enrolment.

2.10 Conclusion and Discussion

Using an unbalanced data set containing 139 countries over a period from 1984 to 2013, this study investigates the impact of the independent effect of youth bulge and their effect moderated by economic growth, unemployment, level of democracy, education and rents from natural resources on political instability in panel data analysis, OECD countries, oil countries, democratic countries and the MENA region.

2.10.1 The Independent Effect of Youth Bulge on Political Instability

The first hypothesis assumes that countries experience high percentages of youth bulge are more likely to experience political instability than countries do not, ceteris paribus.

Empirical results confirm the first hypothesis that a high percentage of youth bulge enhances political instability in panel data analysis. However, they expose a higher risk in non-OECD countries than OECD countries, in democratic countries than autocratic countries and in non-oil countries than oil countries. Interestingly, youth bulge shows a lower political risk in the MENA region than non-MENA; contrary to different claims that a high percentage of youth bulge in the region led to the so-called Arab Spring in late 2010. The higher risk of youth bulge in democratic than autocratic countries is in contrast to projections made by modernization theorist Huntington (1968) who points out that democracy enhances stability because it offers public political channels to raise their demands and settle their disputes peacefully. It might be introducing democracy in a country that has unfavorable economic and social environment leads to political instability.

The lower risk of youth bulge on political instability in oil countries than non-oil countries, in MENA region than non-MENA and their higher risk in democratic

countries than autocratic countries is further investigated by examining the impact of the quadratic term of youth bulge. Empirical results find an unexpected negative sign between the quadratic term of youth bulge and political instability in contrast to suggestions made by Huntington (1968) and in conflict with Urdal (2006) who finds an insignificant positive relationship.

The independent effect of youth bulge in oil and MENA countries is further investigated by examining the joint effect between youth bulge and the quadratic term of the level of democracy. In oil countries, the role of youth bulge on political instability is enhanced at a low level of democracy; however, once it passes a certain level the destabilization effect is reduced. In the MENA region at a low level of democracy, the role of youth bulge enhances political instability; but once it exceeds a certain level destabilization takes over.

The independent effect of youth bulge on political instability in the MENA region and oil countries is further investigated by examining the joint effect between youth bulge and the quadratic term of rents from natural resources on instability; however, no relationship is found.

The empirical analysis could not find a specific percentage of youth bulge that makes a country more prone to political instability than other countries. This is in contrast to Huntington (1996) who proposes that a country faces higher risk of political instability when the percentage of youth bulge exceeds 20% of total population. One can argue that there is no such percentage that is applicable to all countries in the world because there are many factors influencing the role of youth bulge on political instability and determining such a percentage would require considering each country's circumstances individually. Furthermore, even at the country level such a percentage is changeable according to the development in socioeconomic and political environments of a country. For example, as discussed earlier, a high percentage of youth bulge in Germany led to rise of Nazism in the 1940s; yet Germany in the 2000s has an ageing population that has led Germany to welcome more than one million refugees in 2015 to address this problem.

2.10.1.1 Contribution

The chapter provides support that the role of youth bulge on political instability cannot be limited to large-scale incidences of political instability like civil war as measured by the past empirical literature. Furthermore, it suggests that the threat of

youth bulge on political environment is present regardless of their percentage; however, there is variation in the scale of their impact on the political environment. This suggests that the independent effect provides a general explanation about the role of youth bulge on political instability; however, it does not precisely determine the channel(s) that enhances their role. This raises the importance of examining their role moderated by other factors.

2.10.2 The joint Effect of Youth Bulge and Economic Growth on Political Instability

The empirical results confirm the second hypothesis that higher economic growth lowers the impact of youth bulge on political instability; however, there is variation as to its impact on political environments across sub-samples. This is in contrast to Urdal (2006) who finds an insignificant negative relationship between the joint effect and armed conflict in panel data analysis. The independent effect of economic growth across all models has a significant negative sign in line with the findings of Alberto Alesina et al. (1996), Collier and Hoeffler (1998), Collier and Hoeffler (2002), Urdal (2006) and Marcus et al. (2008); however, the results are in conflict with Goldstone (2010) who finds no relationship.

2.10.2.1 Contribution

There is at present only one empirical research carried out by Urdal (2006) who examines the impact of the joint effect on political instability measured by armed conflict in panel data analysis without considering the heterogeneity in the percentage of youth bulge and other independent variables across region in the world. The present study finds that the joint effect is a significant matter for political instability in advancing economy like OECD countries and developing economies such as in the MENA region and oil countries. This is because economic growth determines the level of economic opportunities in a country. The results suggest that it is not the absolute percentage of youth bulge that constitutes a political risk but the failure of economic size or growth rate to satisfy their needs and requirements. Demonstrations that spread in the aftermath of the 2008 economic crisis occurred across a spectrum of countries with differing percentages of youth bulge (like Greece) suggesting that economic growth has an adverse impact on political environment; however, its impact and nature vary. Focusing on armed conflicts as a rare form of political instability ignores the influence of the joint effect on other frequent forms of political instability such as

demonstrations, riots and strikes. The present study finds a negative and significant relationship between the joint effect and political instability in panel data analysis, non-OECD countries, autocratic countries, non-oil countries and non-MENA region

2.10.3 The joint Effect of Youth Bulge and Youth Unemployment on Political Instability

The empirical results find support for the third hypothesis that the higher the rate of youth unemployment, the stronger the impact of youth bulges on political instability. However, the joint effect exposes higher political risk in OECD rather than non-OECD countries, democratic than autocratic countries and in MENA than non-MENA region. In OECD and democratic countries, political instability might goes through political channels by decreasing the popularity of the prevailing government among the public, which has an adverse impact on incumbent chances in subsequent elections. In the MENA region, the absence of democratic channels escalates the risk of unemployed youth to severe conditions of instability in countries such as Egypt, Tunisia, Yemen and Syria where the percentage of unemployment among youth is the highest in the region. Other countries in the region that have comparable percentages, like Saudi Arabia, manage to waive their political risk by taking several financial measures in the wake of the so-called Arab Spring.

The empirical results find no support that unemployment enhances the role of youth bulges on political instability in panel data analysis, oil and non-oil countries and autocratic countries. It could be that governments reduce unemployment by creating public employment. This creates pressure on public finance with adverse impacts on funds allocated to other important sectors.

2.10.3.1 Contribution

The chapter tests the impact of the joint effect between youth bulge and youth unemployment on political instability, which has not been tested before in the empirical literature (to the best of the author's knowledge). There are two empirical studies that investigate the independent effect of youth bulge and unemployment but no interaction is examined. Bricker and Foley (2013) find that the independent effect of unemployment enhances instability, while Goldstone (2010) finds no relationship. Furthermore, this chapter finds that youth bulge enhances political instability in the MENA region through unemployment, which has not been confirmed by past empirical research. It finds that the joint effect has a positive and significant relationship with

political instability in OECD countries; however, the impact is substantially lower than the MENA region

2.10.4 The joint Effect of Youth Bulge and Level of Democracy on Political Instability

The fourth hypothesis assumes that the higher the level of democracy in a country, the lower the impact of youth bulge on political instability. In contrast, the empirical results find that improvement in the level of democracy enhances the role of youth bulge on political instability across all sub-samples. Furthermore, it finds that the joint effect enhances political instability substantially in the MENA region. Despite the similarity of the impact of joint effect on political instability across sub-samples, there are variations in its causes and their prospective impacts.

In OECD and democratic countries the failure of governments to respond to youth bulge needs and requirement might spark small-scale incidences of instability such as riots, demonstrations and strikes. In oil countries and autocratic countries, democracy exposes restrictions on governments to stabilize the political environment through patron-client networks, low level of taxes and distribution expenditure. Furthermore, it increases political competition amongst the elite to gain access to oil rents by destabilizing the political environment through democratic practices. For example, introducing democracy to the oil country Kuwait enhanced political uncertainty. This arises from frequent forms of new government that occur every one and half years over a period from 1961 to 2004 which led to a substantial cost of development processes (Al-Ghazali, 2014).

In the MENA region, it might be that the combination of under developed economic environments and social structures are not ready to seek democracy. While this study does not rule out the fact that democracy can lower the role of youth bulge on political instability, it emphasizes the important of laying down foundations for its introduction, such as education and economic level. More importantly, it requires creating a culture amongst the public such that the outcome of the democratic process should be respected and applied. Additionally, in countries where loyalty to family or tribe comes ahead of the state, the government needs to replace such loyalty to state before introducing democracy otherwise it becomes source of segmentation in society.

The positive association between the joint effect and instability represent a departure from the Goldstone (2001) argument that youth bulge turns into violence

when youth find it difficult to influence the political system, gain access to elite positions and there are insufficient channels in which to raise their demands peacefully. Similarly, it is in contrast with the modernization theorist argument made by Huntington (1968) that the risk of political instability in a country increases when the political system does not have channels to accommodate the civic skills of an educated generation. Empirically, this study differs from the finding of Urdal (2006) of an insignificant negative relationship between the joint effect and the risk of armed conflict. The independent effect of the level of democracy on instability does not hold across all models, in conflict with the empirical findings of Collier et al. (2000) and Collier and Hoeffler (2004) who find a negative association between regime type and political instability.

2.10.4.1 Contribution

This chapter examines the impact of the joint effect on political instability in different sub-samples and applies a broad proxy of political instability unlike Urdal (2006) who examines it in a panel data analysis using armed conflict as a proxy of instability. The use of different sub-samples to examine the joint effect is far superior in capturing the impact on instability than a panel data analysis because they take into account variations in socioeconomic environment. This is because the benefits of democracy required favorable socioeconomic environments; otherwise it leads to instability (Hegre and Nome, 2010). Furthermore, the study finds a positive and significant relationship between the joint effect and political instability in panel data analysis and MENA region. In the MENA region, the results suggest that other factors influence youth bulge and that living standards are more important than introducing democracy.

2.10.5 The joint Effect of Youth Bulge and Level of Educational Attainment on Political Instability

The fifth hypothesis assumes that the higher the level of educational attainment, the stronger the impact of youth bulges on instability. The empirical results confirm the hypothesis in the MENA region and oil countries.

Oil countries rely on distribution expenditure among other expanding educational opportunities to stabilize their political environment, as suggested by rentier state theory without considering the requirements of their labor market. Their labor markets are dominated by oil industries that require few highly qualified human

resources as suggested by the Dutch Disease model. The risk of educated youth with university level attainment on instability is higher than youth with education less than university degree level. Modernization theorist Huntington (1968) points out that the higher the educational attainment among the unemployed, the stronger the destabilization effect on the political environment.

In the MENA region, rentier state theory and the Dutch Disease model are applicable to many countries because they are rentier countries. There is also another issue associated with education in the region, which is the existence of a skills mismatch between the skills attainted from the educational system and those required by labor markets, leading to different scenarios in countries rich in natural resources and countries poor in natural resources. In countries rich in natural resources like monarchies in the Arabic Peninsula, governments continue to absorb educated youth into the public sector while the private sector continues to be dominated by expatriate workers. This has an adverse impact on these governments' efforts to diversify economic activities by consuming much needed public resources to create public employment. These resources could be allocated to specific sectors to promote economic growth in the long run. Furthermore, they deprive their economies from the financial resources remitted annually by expatriate workers in the private sector to their home country. In resources-poor countries, the skills mismatch reduces their ability to diversify their economic activities in order to reduce pressure on government to act as an employer of last resort.

This positive joint effect in the MENA region and oil countries is in line with Urdal (2006) who finds an insignificant positive relationship between the joint effect of youth bulge and education on armed conflict and a significant positive relationship with the onset of terrorism, riot and violent demonstration.

In other contexts such as OECD countries, democratic countries and panel data analysis, the joint effect is negative. In OECD countries it might be that decreasing gross tertiary enrolment has a downward effect on collected taxes needed to stimulate economic growth and to meet expenditures for care of ageing populations in these countries. In democratic countries, the failure of democratic government to respond to pressures created by lobby groups to expand educational opportunities at university level leads to further instability.

The independent effect of gross tertiary enrolment is negatively associated with instability across most of the models in line with the findings of Alesina and Perotti (1996), Collier and Hoeffler (2004) and Barakat and Urdal (2009); but is against the findings of Winckler (2002), Goldstone (2002) and Urdal (2006) who find that increases in the level of education increases the level of political instability; lastly the results are in conflict with Goldstone (2010) who finds no relationship. This is in contrast to the modernization theorist argument by Huntington (1968) that a high level of educational attainment leads to democracy, or otherwise to instability.

2.10.5.1 Contribution

This chapter examines the impact of the joint effect on political instability under different circumstances using a broader concept of political instability. It also uses an alternative measure of political instability. This is unlike Urdal (2006) who pooled countries without considering variation between them in percentage of youth bulge and level of educational attaintment. The descriptive statistics of the two variables show there is a significant variation in the two variables across all sub-samples. Urdal (2006) used armed conflict as his dependent variable, which might be considered as an infrequent incidence of instability as discussed earlier in this chapter. Urdal (2006) also uses another proxy of political instability that measures small-scale instability; however, it has been criticised for its bias towards countries that have high interests in Western agendas as discussed earlier. The present study finds a negative and significant relationship between the joint effect and political instability in panel data analysis and non-oil countries. Furthermore, it finds that the joint effect has a positive and significant relationship with political instability in the MENA region.

2.10.6 The joint Effect of Youth Bulge and Rents from Natural Resources Attainment on Political Instability

The sixth hypothesis assumes that the higher the rents from natural resources, the lower the impact of youth bulges on instability. The empirical results confirm the hypothesis in a panel data analysis. The reliance on non-tax revenue gives a government flexibility to arrange funds in response to the sudden threat of youth bulge on political environments, especially in countries where they have accumulated reserves from oil rents. Such flexibility might not exist in countries reliant on tax revenues. This is because increased taxes might increases dissatisfaction among the public, especially when living costs are beyond their means. Furthermore, increasing taxes might go

through long procedures either to pass bills in parliament in democratic countries or by preparing the public to receive such increases in autocratic countries in order to eliminate its adverse impact on public satisfaction. The empirical results of this study are in line with rentier state theory that assumes rents from oil have a strong stabilization effect on political environment.

In the MENA region the joint effect has a positive relationship with instability. It could be that while oil rents increase it does not meet youth bulge requirements. Oil rents consumed by a high level of corruption or that is invested in patron-client networks while educated youth experience unemployment enhances instability. A government failure to distribute part of oil rents voluntarily to satisfy youth bulge requirements provides youth with motivation to enforce distribution by violent means in line with projection made by rent seeking theory.

The independent effect of rents from natural resources on instability is in line with empirical results found by Ross (2001), Sandbakken (2006) and Ross et al. (2011) who find a negative relationship between rents and political instability; however, it goes against the empirical literature on rent seeking as found by Isham et al. (2005) and Taydas and Peksen (2012) who find a positive relationship between rents and instability. Similarly, it is against other empirical studies that find no relationship between the two variables such as Fearon and Laitin (2003), Blattman and Miguel (2010), Goldstone (2010) and Bricker and Foley (2013).

2.10.6.1 Contribution

The chapter examines the impact of the joint effect on political instability that (to the best of the author's knowledge) has not been tested before in empirical research. Past empirical research examines the independent effect of rents from natural resources without examining its interaction with youth bulge on instability in rentier states. It finds a negative and significant relationship between the joint effect and political instability in panel data analysis.

The six hypotheses in this chapter test prospective channels of instability in the MENA region, which (again, to the best of the author's knowledge) forms the first empirical research to consider the role of youth bulge on instability in the region moderated by other factors.

2.11 Future Research

Future research concerning is necessary to examine the independent effect of youth bulge on instability in countries where the percentages of youth bulge is similar yet they display variations in socioeconomic and political environment. For example, while countries in the MENA region have a similar percentage of youth bulge, monarchies in the Arabic Peninsula have stable environments, some of which is equivalent to levels in fully developed countries. However, these monarchies fall behind developed countries in other areas like level of democracy and bureaucratic quality. What factors contribute to their stability? Is there a relatively small population size in these monarchies compared to other countries in the region? Or are there economic opportunities that continue to attract people from around the globe to work and live there? These questions are left for future research to explore.

The role of youth bulge on political instability moderated by economic environment suggests several clear directions for future research. One interesting area is the role of youth bulge on political instability moderated by entrepreneurship. The importance of the sector can be seen from its ability to absorb a sizable fraction of the labour force, unlike the industrial sector. The latter sector needs less labour because of technology advancement that has led to less need for human resources. Similarly, the service sector hires more human resources than other sectors; it would be interesting to study the variation of political instability between countries with similar percentages of youth bulge with differing sizes of service sectors.

The empirical results find no support that unemployment enhances the role of youth bulges on political instability in panel data analysis, oil and non-oil countries and autocratic countries. This chapter offers several explanations for such results, which need to be verified by future research. One possible research area is the impact of unemployment at different educational levels on political instability. Unemployed youth with primary education might or might not be more risky to political environments than youth with university level education. In other words, what is the impact of different levels of education on the role of unemployed youth on political instability?

The joint effect between democracy and youth bulge on instability also requires further investigation. It might be that the absence of democracy in countries with a high percentage of youth bulge is offset by the availability of economic opportunities and abundance of employment. For example, countries in the MENA region have a high

percentage of youth bulge and a low level of democracy; however, monarchies in the Arabic Peninsula do not experience the instability of other countries in the region. What factors explain the variation in the impact of joint effect on political instability under these two different conditions?

The mismatch between education and economic opportunities enhances political instability in countries as projected by modernization theory. Turning education from threat to opportunity requires further investigation in the areas of skills match and education quality. High levels of educational attainment can be masked by poor quality or mismatch with labour market requirements. Investigation into the role of youth bulge on political instability in countries with high quality educational systems versus poor quality systems can help to address the weakness in the educational system and the failure of the labour market to absorb youth with a university-education. Alternatively, future research can investigate their impact on instability in countries that include developing civic skills into the educational curriculum versus countries that do not.

2.12 Policy Implications

Overall, empirical results show that socioeconomic and political factors moderate the role of youth bulge on the prevailing political environment. Hence, public policy needs to create a favorable economic environment and educational system that matches its requirements in order to turn youth bulge from demographic curse into demographic dividends.

Policy makers need to place more emphasis on education that can stabilize the political environment directly by providing youth with civic skills that make them less violent, and indirectly by stimulating economic growth. Directly it equips youth with civic skills that make them rely on discussion to settle their disputes (rather than violence) so that one of the key requirements of democracy is achieved. Indirectly, it stimulates economic growth by providing labor markets with youth that have different educational levels. Failing to do so leads to a skills mismatch between supply and demand of human resources that forces a government to act as employer of last resort or re-qualify youth to match labor market requirements, otherwise their threat on political environment increases. While public employment offer a quick response to the youth bulge issue, circumstances in some countries might restrict its use, such as insufficient financial resources. Countries that have insufficient financial resources may select to continue to enlarge the public sector by decreasing wage levels, its growth or

depreciating their currency to meet expected wages. Under such conditions they shift political risk from youth to other areas such as increasing the level of corruption. This has an adverse impact on all country-specific aspects over the long run.

Policy makers should not expand educational opportunities to release the threat on the political environment over the short run, especially when labor markets are not rewarding. This has several adverse consequences on political environment over the long run. It decreases education quality, especially when the allocated resources do not keep pace with the sharp increase in educational opportunities. It relieves their risk on stability over the short run but renews their risk over the long run, and may even make the risk stronger once youth complete their study and find it difficult to join the labor market.

Policy makers need to boost economic growth in labor-intensive sectors such as services and entrepreneurship. In some countries where youth bulge makes up a high percentage of the population like the MENA region, the entrepreneurship sector is underdeveloped for several reasons; mainly insufficient finance for start ups and cumbersome administration procedures. Addressing these obstacles can achieve dual objectives for the region. First, it helps to create employment opportunities. Second, it creates a new culture in a society that employment is not the sole responsibility of a government and that each individual is responsible to find his/her way in the labor market. Policy makers need to develop diversification in service activities that tend to absorb an increasing number of job seekers. Developing one service sector over another may put economic growth, and in turn stability, at risk. For example, Egypt and Tunisia face difficulties in boosting economic growth in the aftermath of the regime change in 2011 because of their heavy reliance on tourism that requires a high level of stability. One possible service sector that contributes to long run economic growth as found by empirical research is a high level of integration with international markets as measured by trade openness. Hence, policy makers need to address obstacles hindering trade openness and develop infrastructure to boost it. By doing so, government and the country as a whole reap the benefits. The government benefits by increasing its revenue, which can be reallocated to eliminate the risk of specific factors that contribute to political instability such as low educational attainment. Economic diversification brought by trade openness reduces pressure on government to act as an employer of last resort. Such diversification produces demand on human resources at different educational structures; consequently, it directs the public to areas of study with the

highest potential endowment. This contributes to a reduction in unemployment observed in some countries because of skills mismatch. In some countries that do not have manufacturing based products, they can specialize in re-exporting trade to other countries. In summary, policy makers can reduce the role of youth bulge by creating a combination of an attractive economic environment and educational system that satisfies the needs of such an environment.

One prospective channel to reduce unemployment resulting from poor domestic economic growth is encouraging youth bulge to start e-commerce projects. Such projects connect domestic youth entrepreneurs to costumers with different needs and requirements at a worldwide level. This helps to mitigate the influence of the prevailing domestic economic environment in the role of youth bulge on instability.

Public policy needs to consider a country's unique circumstances to succeed in addressing the role of youth bulge on political instability. Policy that pays off in other countries might not provide comparable dividends in other countries. For example, some countries in the MENA region achieve high levels of educational attainment yet suffer from a skills mismatch problem. These countries need to reform their educational system to match skills required by labor markets. Other countries in the region have low educational attainment, so their priority should be increasing the number and quality of educational opportunities.

The level of democracy can mitigate the risk of youth bulge causing political instability when a country has attributes such as a high level of economic development and a high level of educational attainment. Introducing democracy to offset the adverse impact of poor economic development on the political environment can lead to a severe case of political instability. Hence, policy makers need to prioritize economic and political factors according to their importance to the political environment. Achieving economic development and high levels of educational attainment prior to democratization enhances the probability that democracy will not case an outbreak of political instability. Policy makers should be aware that, by its very nature, democracy needs a long period of time to consolidate. Mature democracy requires a change in attitudes both among voters and decision makers within institutions.

Chapter 3

Does Corruption Enhance Political Instability?

3.1 Introduction

A high percentage of youth bulge in a country creates pressure on economic and political opportunities. The presence of corruption can cause further deterioration in the availability of these opportunities. This is because corruption has adverse implications for macroeconomic stability, foreign direct investment, entrepreneurship and governmental regulation. In addition, it can increase the level of suffering among poor people who find it difficult to gain access to public goods and services without paying bribes, as indicated by the World Bank (2000). To summarize the adverse impact of corruption on a society Transparency International (TI) (2015) comments that "public sector corruption is so much more than missing money. It is about people's lives".

The annual bribery worldwide is estimated to total around one trillion US dollars. This estimation includes only corruption in the form of bribes paid by private agents to public officials and does not include other forms of corruption such as embezzlement and theft of public funds. Although embezzlement is not included in the estimation it can be a serious problem when corruption is widespread in a country. TI estimates public funds embezzled by the Suharto regime in Indonesia to be somewhere between US$15-35 billion. Similarly, embezzled funds by Marcos in the Philippines, Mobutu in Zaire, and Abacha in Nigeria are estimated to be around US$5 billion each (Kaufmann, 2005). Given the devastating impact of corruption, it has garnered significant attention from international organizations and policy makers worldwide. The political consequences of corruption received further attention with the onset of the so-called Arab spring in late 2010 in the MENA region, which can be partially attributed to widespread corruption in some countries in the region.

Empirical and theoretical research on the consequences of corruption explores its impact mainly on the economy[150], government performance or public welfare[151]. There are only a few empirical studies that explore its independent effect on the level of political instability. Fjelde (2009) points out that there is no systemic empirical investigation that explores the impact of corruption on the level of political instability.

[150] See for example and Wei and Shleifer (2000), Habib and Zurawicki (2002), Ketkar, Murtuza and Ketkar (2005), Méon and Sekkat (2005).
[151] See appendix for past empirical work on the consequences of corruption.

Neudorfer and Theuerkauf (2014) indicate that there are few empirical studies that explore the impact of corruption on the level of political instability using a large number of countries and covering an extended period of time.

Past empirical literature is twice as likely to explore the determinants of corruption rather than its consequences as indicated by Judge, McNatt, and Xu (2011). Two empirical studies only examine the impact of the independent effect of corruption on the level of political instability; namely, Damania, Fredriksson and Mani (2004) and Mo (2001). However, their main focus is not on investigating the impact of the independent effect of corruption on political instability. This means that they did not provide an explanation of the nature of the relationship between these two variables. Damania et al. (2004) aim to identify the circumstances that lead to persistence of corruption and policy distortion in certain political regimes. They find that a high level of political instability reinforces this tendency. Mo (2001) aims to identify the transmission channel that links corruption with poor economic growth. Mo finds that the political instability channel accounts for 53% of the negative effect of corruption on economic growth. This is certainly significant and warrants further study.

There is debate in the literature about the impact of the independent effect of corruption on political instability. The first view assumes it has a destructive impact on the political environment while the second view states that it enhances stability. Amundsen (1999) illustrates its stabilization effect in Southeast Asian countries and its destabilization effect in some African countries. One possible explanation is the impact of corruption on the political environment is moderated by other factors such as youth bulge, youth unemployment and education. The importance of the moderation effect comes from its potential to explain how corruption may increase the level of political instability or how it forms an alternative to reform as indicated by Huntington (1968) and Leys (1965). Although there are several studies that point out to the importance of the joint effect between corruption and the above factors, there is little empirical research that tests for it (Farzanegan, Reza and Witthuhn, 2014). Only one empirical study investigates the impact of corruption on political instability moderated by youth bulge. Farzanegan et al. (2014) test the impact of the joint effect of corruption and youth bulge on political instability and they find a significant positive relationship.

This chapter aims to extend the tentative initial forays in the literature by examining the consequences of corruption; more precisely, its impact on political instability. To this end, it examines empirically the independent effect of corruption on

political instability. This study is distinct from Damania et al. (2004) and Mo (2001) in several important aspects. First, the main focus of the present study is to examine the direct effect of corruption rather than its indirect effect through other channels. Damania et al. (2004) investigate the judicial efficiency channels that link political instability to high levels of corruption. Similarly, Mo (2001) aims to identify the channels that link corruption with poor economic growth.

Second, this study uses a longer data set that covers a period from 1984 to 2013 unlike the previous studies. Damania et al. (2004) examine the effect using a cross sectional data set covering a period from 1997 to 1999. This short time period has been criticized because it is insufficient in capturing the causal relationship that runs from independent to dependent variables. Adsera, Boix, and Payne (2003) argue that the annual variation in corruption score in a country may be related to specific scandals or electoral episodes more than actual behavior. Montinola and Jackman (2002) point out that such variation is high, especially in countries experiencing political reform. In such circumstances variation in corruption score may be due to measurement error related to high levels of reporting of corruption scandals associated with democracy instead of actual behavior. Similarly, Goldsmith (1999) indicates that new democratic systems experience high levels of corruption because of high levels of reporting of corruption scandals.

Third, this study takes the novel step of investigating the influence of corruption in the role of youth bulge on political instability. It will further extend the sparse literature in the political consequences of corruption by examining its effect moderated by other factors. This is unique from Farzanegan et al. (2014) who examine only the joint effect of corruption with youth bulge on political instability. The present study is distinct because it measures youth bulge as the ratio of youth aged 15-24 years old to population aged 15 and older unlike Farzanegan et al. (2014) who measure it as the number of population aged 17-25 years old as a percentage of the working age population (15-64 years old). Additionally, it uses a longer data set spanning 1984 to 2013 in comparison with the data the set used by the previously mentioned study that covers a period from 2002 to 2012. Furthermore, the present study examines the prospective channels that link corruption and political instability through labor markets and education. Thus, it forms an entirely novel and powerful means of analysis of the effects of corruption on political instability by considering a spectrum of influencing factors.

Moreover, this study differs from past empirical research that investigates the independent and the joint effect of corruption on political instability in its choice of data set and analysis approach. It uses a measurement of corruption from the International Country Guide Risk (ICGR) that capture its political risk[152]. The data set measures political and bureaucratic corruption; however, it gives more emphasis to the former. Political corruption is the main focus of theoretical argument in corruption as indicated by Fjelde and Hegre (2014). Political corruption exposes higher risk to the political environment than bureaucratic corruption through its adverse impact on public investment projects that improve public welfare (Tanzi and Davoodi, 1998). ICGR measures the political risk of corruption rather than its level (Lambsdorff, 2007). This overcomes the influences of culture and religion that might influence the strength or weakness of the relationship between corruption and political instability (Eckstein, 1988). For example, in some cultures it is not a threat to the political environment because it is seen as "grease in the wheel" more than "sand in the wheel" (Goldsmith 1999). The data set used in this study considers the four forms of political corruption, namely market, patronage, nepotism, and crisis (Johnston, 1986). Another difference between this study and previous research is that it measures political instability using an aggregate index of internal conflict and government stability from ICGR. Mo (2001) measures political instability in the form of annual political assassinations per million and number of revolutions per year; both observations are averaged over the sample period. These are rare incidences of political instability, as discussed in Chapter 2. Farzanegan et al. (2014) measure political risk of corruption using the World Governance Indicators. Damania et al. (2004) measure it as the likelihood that a government will be destabilized or overthrown using an index constructed by Kaufmann, Kraay and Zoido-Lobaton (1999). In addition, this study examines the independent and the joint effect of corruption on political instability based on OECD countries, level of democracy, oil revenue and MENA region, which are expected to influence the relationship between corruption and political instability. These sub-divisions show significant variation in the percentage of youth bulge, corruption and other determinants of political instability. The final distinction between this study and the prior studies is that it examines the independent effect of corruption in countries based on their score of corruption, income level and the percentage of youth bulge. It investigates the impact of youth bulge moderated by corruption on political instability at

[152]Damania et al. (2004) and Mo (2001) measure it using a corruption index from TI while Farzanegan, Reza and Witthuhn (2014) utilize World Governance Indicators from the World Bank.

each level of corruption. It further explains the impact of youth unemployment and corruption in countries with corruption above the average value versus countries with less than the average value. In short, it forms a comprehensive study on political corruption.

The main hypothesis of this study is that the independent effect of corruption enhances political instability. Furthermore, corruption exaggerates the impact of gross tertiary education, youth bulge and unemployment on political instability. These hypotheses will be examined by using unbalanced panel data based on observations from 139 countries covering a period from 1984 to 2013. Additionally, it will investigate the impact on political instability in OECD, democratic, oil and MENA countries.

The chapter is organized as follows. Section 3.2 provides a review of the literature; Section 3.3 explores the link between corruption and political instability; Section 3.4 discusses the link between youth bulge, corruption and political instability; Section 3.5 outlines the models, data and methodology; Section 3.6 provides the measurement of corruption; Section 3.7 outlines the estimation strategy; Section 3.8 gives the estimation results; Section 3.9 provides the sensitivity analysis; Section 3.10 provides a discussion and conclusion; Section 3.11 posits future research and Section 3.12 provides policy implications.

3.2 Literature Review: The Effect of Corruption

The following section provides a brief overview of the independent effect of corruption on political instability and its moderated effect by other factors that lead to reduce economic opportunity in a society.

3.2.1 The Effect on Political Instability

Although corruption is a political factor, it has a negative impact on a society (O'Sullivan et al., 2011). Corruption, through its adverse impact on a government's financial and non-financial performance, reduces a government's ability to provide sufficient quality and quantity of public goods and services. This creates a favorable environment for political instability.

A high level of corruption has adverse impacts on a government's financial and non-financial performance. In financial performance, corruption negatively affects public expenditure and revenues. Public expenditure tends to favor sectors that increase

the opportunities of rent seeking at the expense of sectors that aim to create public goods and services that contribute to the political survival of a government (Amundsen, 1999). Henderson and Singer (2000) indicate that public expenditure tends to be allocated to sectors that increase the opportunities of rent seeking activities like military expenditure in countries with high levels of corruption. Empirical research supports the positive association between corruption and misallocation of public expenditure. In panel data analysis Gupta, De Mello, and Sharan (2001) find a significant positive relationship between corruption and military expenditure as measured by military expenditure as a ratio of GDP. In the case of public revenues, a high level of corruption decreases the level of government revenues. Friedman , Johnson , Kaufmann , and Zoido-Lobaton (2000) find in cross sectional analysis that government size (measured by the percentage of taxes to general revenue) tends to be small in a country with a high level of corruption because many firms prefer to operate underground to avoid poor bureacratic quality. Mauro (1997) indicates that corruption increases lost taxes in the form of tax evasion or tax exemption. Tanzi and Davoodi (1998) find in panal data analysis that corruption reduces the level of government revenue as a percentage of GDP even when controlling for per capita GDP. In non financial government performance, Nice (1986) indicates that political debate in a country with a high level of corruption is dominated by charges and counter charges of corruption incidences that come at the expense of development policies that aim to benefit society.

The waning of government performance in the face of a high level of corruption produces several consequences on sustainable development and public welfare. Public expenditure tends to favor sectors that are economically and socially unproductive such as rent seeking and private goods at the expense of sectors that contribute to sustainable development such as health and education. Underproviding in these sectors hurts the public, especially these who cannot substitute these goods and services from private providers. Empirical research confirms the negative association between lack of provision of the developmental sector and the level of corruption. Gupta, Davoodi, and Tiongson (2000) find in cross sectional analysis that a high level of corruption has adverse effects on provision indicators of health care and education sectors. Mauro (1997) finds in panel data analysis a significant negative relationship between expenditure on education and health on one side and the level of corruption on the other. Similarly, Mauro (1997) finds a significant negative relationship with expenditure on transfer payments, social insurance, and welfare payments; however, the relationship does not hold when GDP per capita is introduced into the model. This under provision

on education harms economic growth over the long run because empirical research into the determinants of economic growth find that education is an engine for long term economic growth as shown by Barro (1992) and Levine and Renelt (1992) as cited by Gupta et al. (2000). Furthermore, Gupta et al. (2001) and Li, Xu, and Zou (2000) find in panel data analysis that corruption is negatively related to different measurements of the level of economic development such as GDP per capita, gross secondary enrolment and urbanization rate.

A high level of corruption increases the level of income inequality in a country. It increases income inequality because misallocation of public expenditure leads to inefficient quality and quantity of public goods and services, making them available only to members of the public who can pay bribes or who have personnel connections as indicated by Taydas, Peksen, and James (2010). Significant resources are required to involve in corruption. These resources are excellent personal connections, exclusive knowledge of government operations and the funds required to offer bribes and hire legal assistance in the case of being caught (Nice, 1986). Furthermore, private agents can misallocate public resources for their own benefit (Ansani and Daniele, 2012). Empirical research confirms the positive association between corruption and income inequality. Gupta, Davoodi, and Alonso-Terme (2002) find in panel data analysis a significant positive relationship. They estimate that one standard deviation[153] increase in the level of corruption increases GINI cofficients by 11%. Gyiman-Brempong (2002) finds in panel data analysis of some African countries a significant positive relationship and the result is robust to changes in estimation techniques. Li et al. (2000) find that corruption explains a large proportion of variation in income inequality across countries. Gupta et al. (2000) find in panel data analysis a significant negative relationship between corruption and income growth of the bottom 20% of the population. The association between the two variables tend to enhance each other so that a country falls prey to a vicious circle of income inequality and corruption, as found by Jong-Sung and Khagram (2005) who find in panel data analysis that corruption reproduces existing income inequalities because it provides the public with justification to continue corruption activities.

Supply shortage of quantity and quality of public goods and services resultant from a high level of corruption may lead to political instability for several reasons. First, it signals a state weakness to manage and control a society; as consequence, opportunity

[153] One standard deviation in corruption is three points in the scale of ten points.

theory assumes an individual's opportunity cost to commit political instability incidences decreases (Taydas et al., 2010). Second, it reduces public trust on the political regime because of its failure to provide sufficient quantity and quality of welfare enhancing public goods and services (Taydas et al., 2010). For example, Azam (2001) attributes much of the political instability incidences in Africa to government failure to deliver public goods that are needed by the public. Similarly, Gupta et al. (2001) and Li et al. (2000) indicate that under provision in the developmental sector (such as education and health care) increases the risk of political instability over the long run. The public distrust of government performance leads them to resist any governmental plan to expand its operation on the basis that it will constitute yet another method to conceal corruption transactions (Nice, 1986). This increases the risk of political instability as a result of political and economic dissatisfaction amongst the public (Taydas et al., 2010). Such risk is higher in autocratic countries than democratic ones because the public in the former might rely on violence to demonstrate their dissatisfaction; whereas, in the latter the public can discipline corrupted politicians in elections (Andvig et al., 2001). The empirical research confirms a positive association between the level of evaluation of state capacity and the level of trust of the political system and civil servants. Anderson and Tverdova (2003) find in panel data analysis a significant positive relationship and conclude that desperate conditions can lead the public towards radical system change. Rose, Mishler, and Haerpfer (1998) and Mischler and Rose (2001) find in panel data analysis [154] a significant negative relationship between the level of corruption and political support to a regime. However, in both studies the relationship does not hold when an alternative definition of political support is used. Carmignani (2009) finds in panel data analysis that institutional quality measured by an index of economic freedom from the Fraser institution has a significant negative relationship with the level of political instability. However, the relationship does not hold when alternative definitions of institutional quality are used. Lastly, corruption has a negative impact on other basic needs of the public such as personal safety. Englehart (2009) finds that corruption has a significant negative relationship with the level of human rights and personal security, which forms one of the basic needs that a competent government should ensure.

3.2.2 The Effect on Economic Growth

There are two views regarding the impact of corruption on economic growth.

[154] Comprising countries from Eastern and Central Europe.

The first view states that it has a beneficial impact on economic growth ("Grease in the Wheel") while the second suggests it has an adverse impact on economic growth ("Sand in the Wheel") (Seligson, 2002).

Corruption has a devastating effect on a country's economic growth under the "Sand in the Wheel" view. It produces its negative impact on economic growth through a mismatch between the growth rate of public revenue and public expenditure that leads to under provision of some sectors that feeds long run economic growth. The effect is similar in countries that rely on non-tax revenue or tax revenue. In countries where public expenditure is financed from non-tax revenue like natural resources rents, the curse of natural resources theory offers an explanation about its adverse impact on economic growth. A government in rentier state responds to pressure created by different rent seeking groups organized around ethnic, religious and geographic lines by increasing the level of current expenditure to finance different forms of income distribution. Over the long run, windfall income does not match the growth rate of public expenditure, leading to low capital expenditure and low rate of return to investment, ultimately causing a low level of economic growth (Lane and Tornell, 1996). Increasing the level of public expenditure in countries reliant on tax revenues leads to an increase in the level of taxation on productive sectors. This reduces the desire to produce and leads to low public revenues. Murphy, Shleifer, and Vishny (1990) find in panel data analysis that a high level of corruption increases the level of taxation on productive sectors. Alesina and Rodrick (1991) find in panel data analysis that government increases in the level of taxation on productive sectors in order to address income inequality caused by a high level of corruption, which leads to low economic growth.

A high level of corruption has further adverse effects on economic growth through allocation of capital expenditure, its quality and its return rate. Allocation of capital expenditure across different sectors is highly discretionary, unlike current expenditure that reflects past commitments. Such decisions affect both the returns from new projects and returns from existing infrastructure. New infrastructure might have low returns because decisions were made based on the expected payoff for a decision maker rather than its rate of return to the economy. The expected payoff leads to allocation of more funds to new projects and fewer resources will be allocated to existing projects to keep them in good condition, causing the rate of return to fall even further. Allocating fewer resources for maintenance and operation is one strategy used by corrupted officials to let existing projects deteriorate such that they reach a point

where they need to be rebuilt again, allowing officials an opportunity to extract even more rents (Tanzi and Davoodi, 1998). Gyiman-Brempong (2002) finds in panel data analysis comprising a group of African countries that corruption decreases the productivity of existing resources and the level of investment in physical capital. There are several empirical studies that investigate the relationship between the composition of public expenditure and the level of corruption. Mauro (1997) finds no relationship between the two variables in panel data analysis. Mauro (1997) indicates that the quality of the data set might fail to establish such a relationship. In contrast, Tanzi and Davoodi (1998) find in panel data analysis a significant positive relationship between corruption and capital expenditure, even when controlling for per capita GDP. Also, they find that corruption has a significant negative relationship with operation and maintenance expenditures.

A high level of corruption produces its adverse effect on economic growth by increasing the feasibility of rent seeking activities at the expense of productive sectors like entrepreneurship. Murphy et al. (1990) find in panel data analysis that corruption in the form of rent seeking has an adverse effect on economic through different channels. First, it absorbs labour and other resources available for productive sectors such as entrepreneurship. This deprives the economy from benefits associated with widespread entrepreneurship sectors because most talented entrepreneurs are attracted by rent seeking activities. Second, it reduces entrepreneurs' motivation to start up their businesses because corrupt officials might claim part of future returns from their investment (Mauro, 1997). Third, corruption reduces the level of entrepreneurship in a country by increasing the land GINI coefficient so that entrepreneurs lack collateral assets with which to gain access to the required funds to start up a new business (Li et al., 2000). Fourth, corruption decreases entrepreneurship because it can be used by existing producers of goods and services to prevent new competitors from entering the market (Jain, 2001). O'Sullivan et al. (2011) summarize the adverse impact of corruption on the entrepreneurship sector in the MENA region. They indicate that a combination of a high level of barriers that prevent the establishment of small and medium enterprises and unfair competition practices leads to a high level of corruption that drives talent from the entrepreneurship sector. This leads to sluggish economic growth and increass unemployment to 25% in the region.

The adverse effect of corruption on economic growth filters through several other transmission channels. It decreases economic growth by increasing uncertainty in investment environments, as found empirically by Knack and Keefer (1995) and Mauro

(1997). Uncertainty increases because it is considered as a form of tax, but with a pernicious nature, as indicated by Mauro (1997). The author indicates that it is paid before delivering the promised services and goods without any guarantees that the agreement will be honored after the bribe is paid. It leads to sluggish economic growth through its adverse impact on trade policy and institution quality as found empirically by Leite and Weidmann (1999). They claim that improving the current trade liberalism of Venezuela to the level of Chile was associated with a reduction in its level of corruption; consequently, it increased its GDP annual growth by 1%. O'Sullivan et al. (2011) illustrate the adverse impact of corruption on economic growth in the MENA region. They indicate that a high level of corruption in the region hinders investment decisions of productive sectors that in turn prevent it from playing an important role as an engine of economic growth.

Several strategies are suggested to fight corruption, one of which is privatization. Privatization may reduce the level of government involvment in the economic environment that contributed to (among other factors) the high level of corruption in some countries. However, in countries that have a high level of corruption, privatization fails to reduce the level of corruption; on the contrary, it increases the level of corruption. Jain (2001) indicates that it reduces rent-seeking opportunities associated with discretionary powers of public agents but its process can be a prospective source of corruption in a country that experiences a high level of corruption. The process increases rent seeking opportunities available to public officials who have unrestricted discretionary powers to use the available information to capture large rents. Shleifer and Vishny (1994) find that theoretically privatization does not improve efficiency in a country experiencing a high level of corruption. The adverse impact of corruption on privatization can be summarized in the MENA region as follows. Ross et al. (2011) indicate that a high level of corruption, patronage and lack of motivation and continuity characterize the process in low and middle growth economies such as Egypt, Yemen and Tunisia. As a result, it fails to establish a private sector that can play its prospective role in the economy as an engine of economic growth and employer. Furthermore, it fails to distribute benefits equally across the population so that income and wealth inequality increase, especially among the middle class and socially and economically grieved youth. Shehata (2011) indicates that the causes that led to the fall of the Mubarak regime in Egypt in 2010 were an increasing level of corruption and economic exclusion. As a result, the economic growth achieved in the region over the past decades has not led to an increase in GDP per capita. This indicates that economic

growth in the region has not matched population growth. For example, the average economic growth over the period from 2000 to 2010 was 4.8% while GDP per capita growth was only 2.5%. The gap between the two growth rates is considered among the highest in the world, below only sub-Saharan Africa (O'Sullivan et al., 2011).

The "Grease in the wheel" thesis adopted by the Queuing model and Auction model presents an alternative view of the economic impact of corruption. It states that corruption has a beneficial effect on economic growth by increasing efficiency. The Queuing model presented by Lui (1985) assumes that bureaucrats allocate licenses to private agents who queue for them. Allocation is made efficiently to an agent who is willing to pay a bribe in order to avoid a waiting period (Lui, 1985). The model states that corruption offers a channel to overcome cumbersome regulations, especially in developing countries. Similarly, Leff (1964) argues that corruption helps to overcome pre-existing rules and regulations; consequently, it improves social welfare and helps to increase the wage level of badly paid public officials. The Auction model presented by Beck and Maher (1986) builds upon the views of modernization theorist Huntington (1968) and Leff (1964) who indicate that the private agent may apply either bribe or bidding to win an auction. The model assumes that bribe and bidding are isomorphic; consequently, the most efficient supplier will win the auction (Beck and Maher, 1986).

Several authors challenge the assumptions made by the two models. Tanzi (1998) indicates that the experience of the developing world shows that suppliers who need the work more than the most efficient pay the bribe. Rose-Ackerman (1978) cited by Mauro (1995) argues that the positive effect of corruption cannot be limited to desirable economic areas. Opponents of corruption back up their view with empirical evidence. Mauro (1995) finds in panel data analysis that corruption reduces investment rate and economic growth even in countries with poor institutional quality. Kaufmann and Wei (1999) find in panel data analysis a significant positive relationship between the level of corruption and time spent by international managers with bureaucrats, which rules out the corruption efficiency point of view.

Other views argue that the negative or positive effect of corruption on economic growth depends on its nature. It has an adverse impact only when it is unpredictable and opportunistic[155] otherwise it has a positive effect. Gyiman-Brempong (2002) argues that disorganized and decentralized corruption patterns in many African countries may be

[155] See for example Shliefer and Vishny (1993), Amundsen (1999) and Lambsdorff (2006).

the reason behind their poor economic growth. Campos, Lien, and Pradhan (1999) find empirically that corruption with low predictability and highly opportunistic has a negative impact on economic growth. They present the case of countries in eastern Asia that succeeded in achieving high economic growth despite their high level of corruption. The authors attributed this to high predictability and low opportunistic cost of corruption in comparison with the nature of corruption in other developing countries. Similarly, Li et al. (2000) find in panel data analysis that the deleterious effect of corruption on economic growth in Asia is less significant than other regions in the world. For example, they estimate that one standard deviation increase in the level of corruption in Asia decreases economic growth by 0.14%; whereas, it reduces economic growth by 1.8% elsewhere. The World Bank (1997) cited by Lambsdorff (2006) finds in panel data analysis that at certain levels of corruption, when the nature of corruption is predictable and not opportunistic, it is associated with a high investment rate.

3.3 The Nexus between Corruption and Political Instability: An Overview

Several explanations are offered to explain the variation in the level of corruption across both time and different countries. These explanations group the determinants of corruption into political, economic, and social factors. Modernization theorist Huntington (1968) argues that the process of modernization breeds corruption; consequently, it might lead, with specific conditions, to political instability. Huntington determines three such factors. First, it changes public perception towards basic values of a society because of integration with other countries in the world. As a result, the public judges the norm in their society in light of newly gained ideas, norms and standards brought by integration with other countries in the world. Behaviors and norms that are acceptable and legitimate based on a society's valuation may become corrupted and unacceptable based on new ideas gained from international integration. Second, it creates new sources of wealth and power among different groups in a society. Some of these groups may find it difficult to join political systems through legitimate channels, so they use corruption to gain access to the system. The level of new sources of wealth and power in relation to available political opportunities determines the level of corruption. Its level increases when the growth in economic opportunities exceeds development in the political environment. Amundsen (1999) and Tavares (2005) find that economic reform leads to a high level of corruption when economic opportunities increase yet accountability measurement continues to be underdeveloped. Third, it is associated with expansion of government authority and increase in the number of

activities subject to governmental regulations. Huntington (1968) suggests increasing state capacity in the form of high quality law enforcement as one possible strategy to curb corruption associated with modernization.

In the political economy literature the direction and the nature of the relationship between corruption and political instability is controversial; however, there is general agreement that there is a relationship between the two variables. In the direction of causation, Treisman (2000) in a comprehensive study of the determinants of corruption includes political instability as predictor of corruption; however, the author does not rule out the possibility of the reverse relationship that runs from corruption to political instability. The author indicates that while a high level of political instability may increase opportunities for corruption, a high level of corruption might increase the risk of demonstration, strike, and even external invasion. This produces two streams in literature. The first stream assumes that causation runs from corruption to political instability and the second stream assumes that causation runs from political instability to corruption. The nature of relationship between the two variables likewise has two different views: the first view assumes it is positive as suggested by the theory of distributive corruption while the theory of extractive corruption states it is negative.

The first stream in the literature assumes that causation runs from corruption to political instability. Under this stream, corruption through its detrimental effect on public expenditure, economic growth, income inequality and public welfare increases the economic and political dissatisfaction amongst the public so that they are more likely to stand against a government. Few empirical studies investigate the impact of corruption on the level of political instability, whether directly or indirectly. Goldstone et al. (2010) investigate the direct causation and find no relationship. The result might be attributed to the proxy used to measure the level of political instability[156]. One can argue that these incidences are the exception rather than common incidences of political instability. Taydas et al. (2010) investigate the relationship between three dimensions of state capacity, namely law and order, corruption, bureacratic quality and institutional quality[157] on the one hand and political instability in the form of civil war on the another hand, and they find a significant positive relationship between corruption and political instability. Other empirical literature examines the indirect relationship between corruption and the level of political instability. Mo (2001) examines the indirect

[156] It measures it in the form of civil war, radical change, genocides and politicides.
[157] Sum of corruption, law and order and bureaucratic quality.

relationship between corruption and political instability [158] via human capital accumulation as a prosepctive channel that links corruption to political instability. Mo (2001) finds in a political instabillity model a significant positive relationship between the level of corruption and political instability; however, the model has few control variables[159]. Damania et al. (2004) find no direct relationship between corruption and political instability[160] but they find an indirect relationship via judicial efficiency[161]. Other empirical research examines the impact of other dimensions of institutional quality on the level of political instability. Marcus et al. (2008) examine the impact of the rule of law on the level of political instability using the Conflict Barometer data set. They find a significant negative relationship; however, the relationship does not hold when different estimation techniques are used. Similarly, Bricker and Foley (2013) examine the impact of the rule of law on the level of political instability and find a significant negative relationship between the two variables.

The second stream in the empirical literature assumes that causation runs from political instability to corruption. This stream has two conflicting views regarding the nature of the relationship between the two variables. The first view assumes it is positive and the second assumes it is a negative relationship. Treisman (2000) indicates that a high level of political instability makes politicians more opportunistic because they will only stay in office for a short period; consequently, they will try to accumulate large rents during their term in office. In contrast, a high level of political stability offers politicians time to build business relationships with potential suppliers using bribes and then leverage these relationships to generate rents. This stream produces more empirical studies than the first stream. Leite and Weidmann (1999)[162], Adsera et al. (2003)[163] and Pellegrini (2011)[164] empirically find a significant positive relationship between the level of political instability and the level of corruption. Persson, Tabellini and Trebbi (2003) [165] find an insignificant positive relationship. Elbahnasawy and Revier (2012)[166] find a

[158] Political instability measures the possibility that political activity, either organized or individual, is associated with violence.
[159] GDP per capita, political right and total population.
[160] Political instability is defined as the likelihood that a government will be overthrown or destabilized by violent or non-violent means.
[161] It measures perception of incidences of violent and non-violent crime, the quality of judicial system and law enforcement.
[162] Political instability is measured in terms of annual coups and revolutions.
[163] Political instability is defined as the likelihood a government will be overthrown or destabilized by violent or non-violent means.
[164] Political instability is defined as the average number of "veto players" changes in the political system in each year.
[165] Political instability is defined as the average number of leader per year.

significant negative relationship; however, the relationship does not hold to changes of model specifications. Treisman (2000) finds no relationship but does not rule out the possibility of the reverse causation that runs from corruption to political instability[167].

There is a general agreement among economists that corruption is "Sand in the Wheel" whereas among political analysts the nature of the relationship is less clear. Although "Sand in the Wheel" is an economic concept referring to the adverse impact of corruption on economic growth and efficiencies, it can be extended to cover the adverse impact of corruption on political environments as to whether it smooths or hinders the political system. Huntington (1968) argues that the failure of corruption to reduce public pressure on a government leads to political instability. Similarly, Leys (1965) argues the failure of corruption to bring all segments of society together leads to political instability. Given that the impact of corruption on the level of political instability is controversial, literature in political economy adopts two views: the first view presented by the theory of distributive corruption assumes a positive relationship between the two variables while the second view presented by the theory of extractive corruption assumes a negative relationship (Seligson, 2002). Both theories build their arguments based on the nature of corruption that spreads in a country. Corruption leads to political instability when it is uncontrolled, unpredictable and opportunistic, otherwise it leads to political stability. Amundsen (1999) argues that uncontrolled and unrestricted corruption undermines legitimacy of institutions and states because it reduces the quantity and quality of public services and goods offered to public.

The theory of distributive corruption represents the view that corruption leads to political instability. The theory builds its argument based on the nature of the state-society relationship. There is a high risk of political instability when a state is the weaker party in the relationship. The weak state comes under the control of different interest groups who exert pressure and bribes to influence state capacity in order to make private gains leading to a negative impact on public goods such as education, health services, social services and state protection (Amundsen, 1999). Mauro (1993) cited by Mauro (1997) offers another explanation called "strategic complementarity" which presents a type of corruption that is over-opportunistic. According to this view, politicans who have formed a government set up their own bribe collection system. In

[166] Political instability is measured using political stability and absence of violence index from the World Bank Governance Indicators Database.
[167] Political instability is defined in the study as an average number of leaders per year over a period from 1980 to 1993.

the case that the bribe rate is high, this leads to poor economic performance; consequently, the whole government is less likely to stay in office for an extended time.

The theory of extractive corruption presents the view that corruption lead to political stability. The theory assumes that the state is the stronger party in the state-society relationship. A state has a strong control over economic policies both through formal or informal channels of accumulation, redistribution and consumption of public resources. In such conditions the state has strong control over who benefits from corruption, how much and from what type of corruption, so that state institutions will not suffer from corruption because it is predictable and widely accepted by businessmen and the public. A strong state can keep the level of corruption high and stable or it can reduce it to low level and maintain similar benefits as well. This type of corruption is used as an efficient strategy to gain loyalty because a state decides who will get rich from corruption and it has the power to remove individual players in the case of non-loyalty to the prevailing political regime (Amundsen, 1999).

There are several causal observations and empirical studies confirming the stabilization effect of corruption in autocratic countries. Becquart-Leclercq (1989) argues that corruption in a country with authoritarian traditions provides a channel of free movements and distribution of public resources among groups in a society that otherwise would not have access in the absence of corruption. Johnston (1986) indicates that corruption in land reform policy in Morroco has helped the political regime to survive. Medard (1991) cited by Arriola (2009) indicates that the Félix Houphouët-Boigny regime in the Ivory Coast introduced a semicompetitive election in 1980 to remove strong rivals who established independent patronge during their long term in office and replace them with new and cheaper clients. Widner (1992) cited by Arriola (2009) indicates that Daniel Arap Moi in Kenya made the political system more restricted by controlling the distribution of public resources by controlling Parliament. This strategy helped him to form a strong ally and at the same time remove any politicans who did not show loyalty to his regime. Fjelde and Hegre (2014) find in panel data analysis that highly corrupted autocratic and hybrid political regimes are more stable than their counterparts with low levels of corruption.

Corruption is used to stabilize the political environment in democratic countries; however, its frequency and level is lower than its counterparts perceived in autocratic countries. Manzetti and Wilson (2007) present several corruption scandals that occurred in democratic countries such as Germany, Japan, France and Italy in the 1990s.

Corruption is used in democratic countries to smooth the political process and as a strategy to eliminate political arivals. Leys (1965) indicates that different forms of corruption are required in democratic countries in order to integrate a multitude of different interests and groups into the political system. Political elites use client network channels to control economic and political resources to eliminate rivals and to continue to stay in power. Manzetti and Wilson (2007) find in panel data analysis that corrupt governments in democratic countries continue to stay in office by using its client networks to increase its political support. In contrast, other empirical studies argue and find that corruption leads to political instability in democratic countries even with the existance of large interest groups keen to maintain the level of political stability. Fjelde and Hegre (2014) find in panel data analysis that democratic regimes with a low level of corruption are more stable than their siblings with high levels of corruption. Clapham (1982) cited by Arriola (2009) indicates that while this type of corruption may succeed over a short to medium run, in order to maintain the level of political stability over the long run this may lead to a high risk of political instability because of the imbalance between the level and growth rate of public resources and the growth of demands made by the growing number of interest groups.

Curse of natural resources theory examines the impact of corruption on the level of political instability in rentier state, reaching two conflicting views regarding its impact. The first stream presented by oil rent-seeking, distributional inequality and greed assumes that the relationship is positive, whereas the second stream presented by Rentier State Theory assumes it is a negative relationship. Oil rent-seeking assumes a positive relationship because of several factors, among which is a high level of corruption and rent-seeking activities that reduce state capacity. This leads a government to experience difficulty in dealing with opposition movements as indicated by Fearon and Laitin (2003). Weakened state capacity leads to poor economic performance; consequently, it negatively affects government revenues as argued by Collier and Hoeffler (2005). Fjelde (2009) finds in panel data analysis a significant positive relationship between the level of corruption and the level of political instability (measured by civil war) controlling for standard determinants of political instability. Similarly, Neudorfer and Theuerkauf (2014) find in panel data analysis a significant positive relationship between corruption and risk of political instability (measured by ethnic war). Bjorvatn and Farzanegan (2015) find in panel data analysis a significant positive relationship between corruption and internal conflict.

In contrast, rentier state theory assumes that corruption leads to a high level of political stability. Smith (2004) indicates that extensive patron client networks and a high level of corruption helps to achieve a high level of political stability in some rentier states. Herb (1999) illustrates the case of monarchies in the Arabian Peninsula that succeed in maintaining high levels of political stability for several reasons, one of which is the patron client network. As a result, the overall society prefers to involve in rent-seeking activities rather than alliance building and political unrest. This leads to high corruption and creates a strong resistance from different interest groups to reform agendas that aim to give equal opportunities to all of the population (Sandbakken, 2006). Fjelde (2009) indicates that corruption-based patronge in rentier state succeeds in maintaining a high level of political stability by creating vast stakeholders in the political regime. The vast network of stakeholders makes coordination to create opposition inefficient. Fjelde (2009) finds in panel data analysis that the interaction term between corruption and oil production has a significant negative relationship with armed conflict onset. Fjelde (2009) argues that a high level of corruption leads to political instability only in countries with no access to non-tax income. Fjelde illustrates the case of Haiti in 1989, Sierra Leone in 1991, Liberia in 1989 and Uganda in 1994. These countries are poor in non-tax revenue and have a high level of corruption that leads to armed conflict. Similarly, Neudorfer and Theuerkauf (2014) find in panel data analysis that in countries rich in natural resources the risk of political instability increases slowly with an increasing level of corruption but the magnitude is small. Bjorvatn and Farzanegan (2015) find in panel data analysis no relationship between the interaction term of corruption and rents from natural resources and risk of political instability.

3.4 Corruption, Youth Bulge, and Political Instability: Theory

A high percentage of youth bulge in a country enhances political instability when socioeconomic and political environments fail to satisfy their needs. The cohort hypothesis states that their fortune decreases because they create downward pressure on employment prospects and wages. This decreases their opportunity cost and they become more likely to commit political instability incidences (Macunovich, 2000). Azeng and Yogo (2013) argue that the probability that youth bulge will join terrorist organizations increases when employment opportunties cannot keep pace with the number of youth job seekers. In a similar vein, Campante and Chor (2012) indicate that abundant employment opportunities in a country prevent youth from devoting their time

and effort to political instability incidences. Azeng and Yogo (2013), in panel data analysis of 24 developing countries, find no relationship between youth unemployment and the level of political instability. However, youth unemployment has a significant positive relationship with political instability when lag of youth unemployment is used as an instrument. The relationship holds under alternative proxies of political instability. Azeng and Yogo (2013) do not examine the impact of the joint effect of corruption and youth unemployment on the level of political instability. Campante and Chor (2012) find in panel data analysis that unemployment rate has a significant positive relationship with the level of political instability measured by the change of head of state or chief excutive over five years. Employment offers youth bulge a channel in which to advance their life in different aspects. Chaaban (2013) argues that unemployment in the MENA region prevents youth from access to housing and other goods and services that require permanent income for procurement. This partially contributed to the onset of the so-called Arab Spring in late 2010.

Corruption is found empirically to increase the level of grievance and decrease the level of economic and political opportunities in a country. It has an adverse impact on the labor market by increasing the level of taxation on productive sectors to finance rent seeking activities. As result, these sectors might prefer to operate in an unofficial economy with adverse impacts on long-term economic growth. This reduces employment opportunities and wage levels in a country (Le Billon, 2003). It has an adverse impact on public expenditure on development sectors like education that further contribute to economic growth (Mauro, 1998) and increase an individual's opportunity by expanding income-earning opportunities (Collier, 2000). Corruption in some instances has a stabilization effect when it is an alternative to reform as argued by Huntington (1968); however, in other instances it has a destabilization effect when only several interest groups control it. The increasing number of marginalized groups in society relies on violence to gain access to economic rents controlled by these interest groups. The absence of criteria that determines the distribution of its benefits across different groups increases competiton among these groups. The competiton can turn into violence when some groups have military means with which to challenge a government. It further enhances political instability when bribes influence the democratic process through vote buying which makes each party involved in election reliant on violence to defend their position (Le Billon, 2003).

The pressure created by youth bulge on the socioeconomic and political environment is further exaggerated in the presence of a high level of corruption in a country. Farzanegan, Reza, and Witthuhn (2014) indicate that the risk of political instability is heightened in a country in the presence of a high level of corruption and a high percentage of youth bulge that creates pressure on labor markets and economic and political environments. Such risk is an outcome of a high percentage of youth bulge, corruption and the existence of groups to organize their effort. The risk enhances when youth bulge believe that the corrupted government fails to address their economic and political exclusiveness (Hollander and Byun, 2012). Opposition movements use corruption accusation and scandals to organize the abundant aggrieved youth bulge to act against the political regime under the justification to address their economic and political grievances that are increased by the high level of corruption (Le Billon, 2003). The participation of youth bulge in action against a government is highly possible in light of their nature that makes them more likely to participate in political instability incidences compared to older people. First, they have a strong desire to instigate change, which makes them more prone to demonstrations, riots, and different incidences of political instability (Huntington, 1968). Second, they can be influenced by different ideas and stories; consequently, they are more likely to stand against a government (Goldstone, 2001). Today, the internet makes it easy to disseminate different corruption scandals among educated and less fortunate youth to provoke them into taking action against a political regime. Third, they have few responsibilities towards family so that they can commit their time and effort to risky political instability incidences (Goldstone, 2001) especially when they face unemployment and poverty, which makes their recruitment cheaper (Urdal, 2006).

A high level of educational attainment in the presence of a high level of corruption is expected to enhance political instability through economic and political channels. Economically, the failure of labor markets (all other things being constant) to meet educated youth expectations of alternative income opportunities decreases the educated youth opportunity cost to commit political instability incidences (Urdal, ,2004). High levels of corruption reduce employment opportunities further. This enhances political instability when such conditions occur amidst high levels of educational attainment[168]. Politically, knowledge and civic skills attainted by high levels of educational attainment enhances political instability in democratic and autocratic

[168] See for example Barro (1992), Levine and Renelt (1992), Gupta et al. (2000), Li et al. (2000) and Gupta et al. (2001).

countries. In democratic countries the level of associated transparency puts a government operation under public scrutiny. Furthermore, political channels give the public a means to punish corrupted officials. Treisman (2000) points out that a high level of educational attainment helps the public to distinguish between public and private roles. This restricts a government's ability to use public resources freely because the public can punish the observed misuse of it. In autocratic countries the political system does not offer channels to accommodate the civic skills produced by education nor to fight corruption politically (Huntington, 1968). Under such conditions, youth bulge might rely on violence to press for reform.

In light of the previous discussion, this chapter will test the independent effect of corruption and its interaction with youth bulge, unemployment and educational attainment on political instability as following hypotheses show. The empirical analysis will include youth unemployment, youth bulge, rents from natural resources, trade openness, GDP annual growth, level of democracy, gross tertiary enrolment, logarithm of total population and urban growth rate as control variables to support the hypotheses, the expected sign of the corruption and control variables are shown in the table 3.1.

$Hypothesis_1$*: Countries with a high level of corruption are more likely to experience political instability incidences than countries that do not.*

$Hypothesis_2$*: The more corrupt a country, the stronger the impact of youth bulge on the level of political instability.*

$Hypothesis_3$*: The more corrupt a country, the stronger the impact of youth unemployment on the level of political instability.*

$Hypothesis_4$*: The more corrupt a country, the stronger the impact of a high level of gross tertiary enrolment on the level of political instability.*

Table 3.1 the Expected Sign Between Political Instability and Independent Variables

Dependent variable: Political Instability	
Independent Variables	Expected Sign with Political Instability
Percentage of people (both sexes) aged 15-24 to population aged 15 years and older (Yb)	Positive
Total youth unemployment (TYU)	Positive
Natural resources rents as percentage of GDP (Rents)	Negative
GDP annual growth (GDP growth)	Negative
Logarithm of total population (Log T.pop)	Positive
Level of democracy (RT)	Negative
Trade openness (TO)	Negative
Gross enrolment ratio, tertiary, both sexes (%) (GTE)	Positive
Urban annual growth rate (UGR)	Positive
Youth bulge * Corruption	Positive
Gross tertiary enrolment*Corruption	Positive
Total youth unemployment *Corruption	Positive

3.5 Model, Data and Methodology

The four hypotheses discussed above are tested empirically using unbalanced panel data for 139 countries for the period 1984 to 2013.

3.5.1 Model Specification

3.5.1.1 The Independent Effect of Corruption on Political Instability

The base model discussed in the previous chapter is modified to incorporate the corruption variable, which is as follows:

$$PS_{it} = \beta_0 + \beta_1 (Corr)_{it} + \beta_2(eco)_{it} + \beta_3(poli)_{it} + \beta_4(socio)_{it} + e_{it} \quad \ldots\ldots\ldots(3.1)$$

Where:

PS is political instability

Corr is corruption level

Pol is political vector including level of democracy

Eco is economic vector including economic growth rate, trade openness, total youth unemployment and natural resources.

Socio is social vector including urban growth rate, gross tertiary enrolment, youth bulge, and logarithms of total population.[169]

3.5.1.2 Models of the Joint Effect of Corruption with Other Factors

Hypotheses 2 - 4 aim to examine the impact of corruption on political instability moderated by youth bulge, total youth unemployment, and gross tertiary education.

The model is estimated to capture the joint effect of corruption and youth bulge on political instability:

$$PS_{it} = \beta_0 + \beta_1 (Yb)_{it} + \beta_2 (Corr)_{it} + \beta_3 (Corr * Yb)_{it} + \beta_4 (eco)_{it} + \beta_5 (poli)_{it} + \beta_6 (socio)_{it} + e_{it} \quad \ldots\ldots\ldots (3.2)$$

Where:

PS is political instability

Yb is youth bulge

Corr is corruption level

*Yb*Corr is the joint effect of youth bulge and corruption*

Pol is political variables as determined in equation (3.1)

Eco is economic variables as determined in equation (3.1)

Socio is social variables as determined in equation (3.1)

The model aims to capture the partial effect of youth bulge (corruption) on the level of political instability as follows:

$$\mathrm{d}PS_{it}/\mathrm{d}Corr_{it} = \beta_1 + \beta_3 Yb_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.2a)$$

$$\mathrm{d}PS_{it}/\mathrm{d}Yb_{it} = \beta_2 + \beta_3 Corr_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.2b)$$

When $B_3 > 0$ in equation (3.2a) a one point increase in the corruption index increases the risk of political instability with higher percentage of youth bulge. Similarly, equation (3.2b) implies that one percentage increase in youth bulge increases the risk of political instability with higher level of corruption.

The second joint effect is corruption and total youth unemployment, which will replace the joint effect of youth bulge and corruption in equation (3.2) as follows:

$$\mathrm{d}PS_{it}/\mathrm{d}Corr_{it} = \beta_4 + \beta_3 TYU_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.2c)$$

[169] Descriptive statistics are shown in appendix B in the Chapter 2.

$$dPS_{it}/dTYU_{it} = \beta_2 + \beta_3 Corr_{it} \quad \text{.....(3.2d)}$$

If $B_3 > 0$ in equation (3.2c) then a one point increase in the corruption index increases the risk of political instability with higher rate of youth unemployment. Similarly, a one-percentage increase in total youth unemployment increases the risk of political instability with higher level of corruption.

The third joint effect is corruption and gross tertiary enrolment, which will replace the joint effect of youth bulge and corruption in equation (3.2) as follows:

$$dPS_{it}/dCorr_{it} = \beta_6 + \beta_3 GTE_{it} \quad \text{.....(3.2e)}$$
$$dPS_{it}/dGTE_{it} = \beta_2 + \beta_3 Corr_{it}. \quad \text{.....(3.2f)}$$

If $B_3 > 0$ in equation (3.2e) then a one point increase in the corruption index increases the risk of political instability with higher level of educational attainment. Similarly, a one-percentage increase in educational attainment increases the risk of political instability with higher level of corruption.

3.6 Measures of Corruption

This study measures the level of corruption using the International Country Guide Risk (ICGR) index developed by the Political Risk Services Group. The data set measures the level of corruption on a scale of six, where a low score suggests a high level of corruption and a high score indicate as low level of corruption. In this study, the score is re-scaled so that a high score indicates a high level of corruption and a low score suggests a low level of corruption. The data set considers two types of corruption, namely bureaucratic and political; however, it is more concerned with the latter than the former. Bureaucratic corruption measures financial corruption in term of demands of financial benefits to gain government products and services such as export and import licenses, tax assessments, police protection, and loans. Political corruption measures corruption in the form of excessive patronage, nepotism, job reservation, secret party funding and suspicious relationships between businesses and politics.

The ICGR corruption index, like others indices (such as the Transparency International and World Bank), measures the perceived level of corruption rather than its actual level; however, there is high correlation among these indices, which gives high credibility and reliability to their measurements. The ICGR data set has three advantages in comparison with other data sources. First, it has a long time period and country coverage. Second, it considers the two types of corruption, namely bureaucratic

and political corruption, with more attention paid to the latter that forms the main focus of theoretical arguments in corruption (Fjelde and Hegre, 2014). Political corruption more than bureaucratic corruption is seen to produce more adverse effects on different aspects of a society because it distorts the decision-making process associated with public investment projects that improve public welfare as indicated by Tanzi and Davoodi (1998). Third, it measures the level of corruption associated with the risk of political instability, not its level itself, as indicated by Lambsdorff (2007), which fits the objective of this study. This addresses a theoretical difficulty associated with the impact of political culture in shaping public perception towards corruption, which might contribute to the strength or weakness of the relationship between corruption and political instability (Eckstein, 1988). For example, corruption in some cultures does not increase the risk of political instability because it is common and an acceptable norm. In such cultural settings corruption might be seen as "grease in the wheel" more than "sand in the wheel". The direct payment to public officials makes them more helpful and helps to overcome cumbersome bureaucracy (Goldsmith 1999). It also considers another difficulty regarding the impact of religious traditions on the level of corruption. Some religious traditions create social attitudes towards social hierarchy. In hierarchical religions such as Catholicism, Eastern Orthodoxy and Islam, an individual gives priority to family interests over other parties' interests or the state as indicated by Treisman (2000). Therefore, different forms of rent seeking activities in some societies are acceptable because they are seen by the public as a form of respecting family values. Fourth, this definition considers the four forms of corruption indicated by Johnston (1986). These are market, patronage, nepotism and crisis. The level of political instability associated with each form depends on the number of suppliers and stakeholders involved.

Figure 3.1 shows the corruption level across different regions of the world. The MENA region (as expected) along with Northern Africa, Southern Asia, Western Africa, Southern Africa and Central Asia have the highest levels of corruption associated with political risk, whereas Northern America and Oceania are among the lowest. Figure 3.2 shows the level of corruption in OECD vs. non-OECD, oil vs. non-oil and democratic vs. autocratic countries; as expected OECD countries enjoy a low level of corruption across all sub-samples while autocratic countries and oil countries have the highest levels of corruption.

The control variables included in the model that explore the relationship between corruption and political instability are similar to those used in Chapter 2.

Figure 3.1 Corruption Level across the World

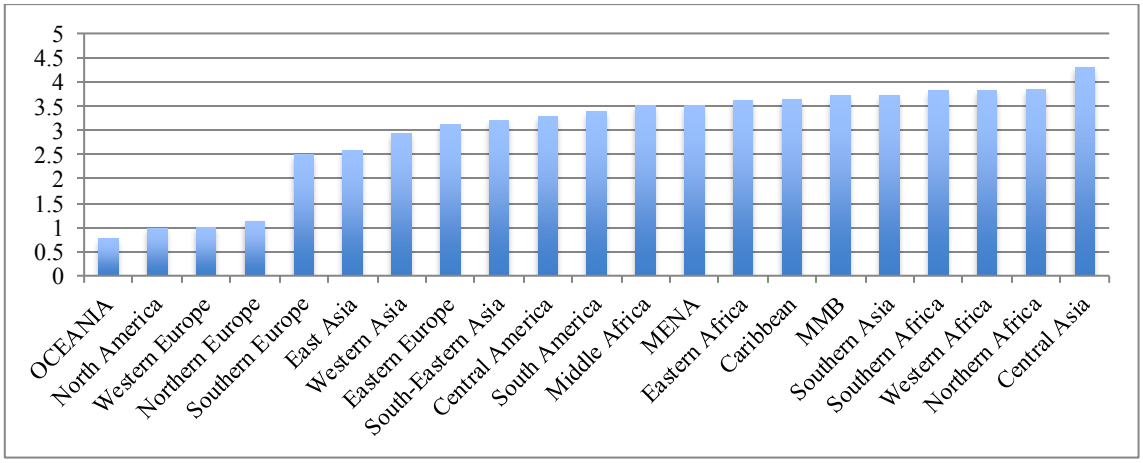
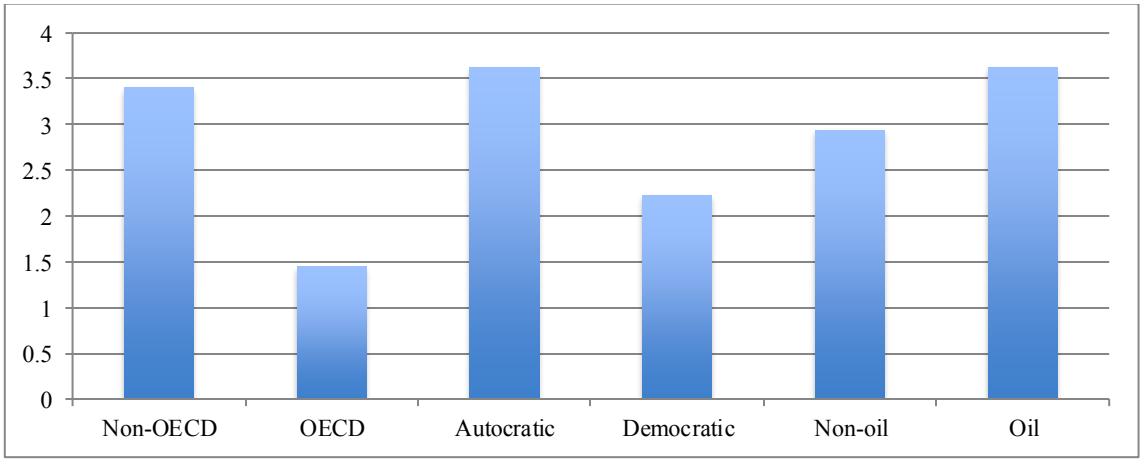


Figure 3.2 Corruption Level across Different Contexts



3.7 Estimation Strategy

This chapter outlines the estimation strategy used, which is similar to that of Chapter 2. The model will be estimated using panel data, OECD countries, oil countries, , democratic countries and the MENA region to capture the independent effect of corruption on political instability and its effect moderated by youth bulge, youth unemployment, and education.

The sub-samples show variation in the level of corruption, youth bulge and gross tertiary enrolment while the variation in unemployment rate is insignificant. OECD countries perform well in controlling the level of corruption (with an average score of 1.44 over the sample period) in comparison with non-OECD countries (average score of

3.44 over the sample period). Similarly, there is significant variation in the percentage of youth bulge between OECD and non-OECD countries. The average percentage over the sample period in OECD countries is 20% versus 31% in non-OECD countries. This captures the impact of youth bulge on political instability moderated by the level of corruption under two scenarios. The first scenario is low score of corruption and low percentage of youth bulge (presented by OECD countries) and the second is a high score of corruption and high percentage of youth bulge (illustrated by non-OECD countries). Furthermore, there is a significant variation in gross tertiary enrolment between the two sub-samples. In OECD countries, the average gross tertiary enrolment over the sample period is 40% in comparison to 16.74% in non-OECD countries. In other words, OECD countries show a low level of corruption and a high level of educational attainment than its non-OECD counterparts where the corruption level is high and educational attainment is low. High level of educational attainment equips the public with knowledge and skills required to observe corrupted transactions. Some control variables show variation between the two sub-samples as mentioned in the descriptive statistics in Chapter 2.

The second sub-sample is created to capture the independent effect of corruption and its moderated effect on political instability in democratic and autocratic countries[170]. The score of corruption and youth bulge show differences between democratic and autocratic countries. In democratic countries the average score of corruption and youth bulge is 2.227 and 23% respectively; while in autocratic countries the average score of corruption is 3.62 and the percentage of youth bulge is 32%. Corruption can occur in autocratic and democratic countries; however, its extent and frequency is lower in democratic countries. Furthermore, using corruption to stabilize the political environment in democratic countries needs to consider the interests of both the public and interest groups. Additionally, it is expected that its adverse impact on the public in democratic countries is less than in autocratic countries; however, the public in democratic countries are expected to be less tolerant towards it. In autocratic countries, some authors like Huntington (1968) argue that it might form an alternative to reform. The impact of the joint effect aims to verify the argument of Huntington (1968) that corruption is an alternative to reform in autocratic countries. In democratic countries, although the percentage of youth bulge is small and corruption is limited, this study aims to capture whether satisfying interest groups comes at the expense of youth bulge

[170] Criteria used to create sub-samples are mentioned in section 2.5 in the Chapter 2.

requirements or vice versa. Democratic countries perform better in educational attainment than autocratic countries (the average over the sample period is 40% in democratic countries vs. 15.876% in autocratic countries). Education in the presence of corruption enhances political instability because it equips the public with knowledge and civic skills with which to monitor a government operation. Does a low level of educational attainment exaggerate or release the impact of a high level of corruption on political instability in autocratic countries? Similarly, does the high level of educational attainment enhance or deescalate the adverse impact of a low level of corruption on political instability in democratic countries? This is explored in subsequent models.

The independent effect of corruption and its joint effect on political instability are examined in oil and non-oil countries[171]. Although there is no significant difference in the percentage of youth bulge, corruption, unemployment and gross tertiary enrolment between the two groups, the use of oil rents might produce the political effect of corruption through different channels. The average score of corruption and the percentage of youth bulge in non-oil countries are 2.939 and 28% respectively, while in oil countries these values are 3.6 and 30% for corruption and youth bulge respectively. However, oil rents enable governments to turn a blind eye to rent seeking activities without taxing the public. Furthermore, governments in oil countries can pacify the public through distribution expenditure like education. Under such conditions the government satisfies public needs and private interests simultaneously. On the other hand, in non-oil countries the public might suffer from its adverse impact twice, both through their living expenses and continuing rises in taxes. Alternatively, they might please public interest at the expense of private interests or vice versa so that the political outcome of corruption differs. The average gross tertiary enrolment in non-oil and oil countries is 28% and 22.5% respectively; however, it might be that in oil countries the percentage exceeds the labor market's requirements and creates pressure on autocratic systems in these countries. Rentier state theory argues that one channel to stabilize the political environment is expansion of educational opportunities; however, the domination of government on the economic environment and the weak private sector make it difficult to generate sufficient employment opportunities to absorb educated youth. What is the effect of educational attainment in the presence of corruption on political instability in oil and non-oil countries? Educational attainment creates pressure on autocratic regimes in oil countries (their average score in the Polity IV project is 7.7

[171] Criteria used to classify countries as oil and non-oil are discussed in section 2.5 in the Chapter 2.

in comparison with 14 in non-oil countries). Does increasing the level of educational attainment alter the impact of corruption on political instability in oil countries? This is examined in subsequent models.

The so-called Arab spring in late 2010 in the MENA region can be attributed to several factors. This study examines the independent effect of corruption and its joint effect on political instability. Following Collier and Hoeffler (2002), this study examines the determinants of political instability focusing on corruption and its moderated effect on it. The independent effect of corruption and its joint effect with youth bulge, unemployment and gross tertiary enrolment are tested one by one. The 2SLS is used to estimate the models to account for possible endogeneity issue. The test shows that GDP annual growth is endogenous so that one-year lag of GDP annual growth is used as instrument because of the difficulty to find an appropriate external instrument [172]. Sensitivity analysis is carried out by fixed effect (period) and an alternative measure of political instability adopted from Saha and Yap (2013) and alternative measure of corruption from Transparency International.

Fixed effect (period effect) is selected over cross section effect because independent variables are a time variant and cross section effect is considered by including dummy variables. The fixed effect is selected over random effect to account for possible correlation between independent variables and omitted variables, mainly between corruption and culture, religious traditions and legal origin that have been found empirically to influence the level of corruption. Saha et al. (2016) indicate that fixed effect absorbs the correlation between independent variables and omitted variables as long as they are time invariant.

Alternative measures of political instability aim to check the sensitivity of the empirical results. Furthermore, it aims to check whether corruption has a broad impact on political instability as measured by an alternative proxy or whether its impact is limited to internal conflict and government stability (the main measure used in this research).

The alternative measure of corruption from TI aims to capture the robustness of the results to changes in the index. This is because each index is constructed based on different methodology (Lambsdorff (2007). Furthermore, indices are constructed based

[172] Endogeneity test and the validity of of year lag of GDP economic growth are given in appendix D table D2.1

on subjective assessment by experts or the public, which increases the probability of bias. To check that the empirical results of this chapter are not affected by bias in the measurement of corruption, the TI index is used for sensitivity analysis. The index reduces bias by constructing its composite index by gathering information from multiple sources.

This research uses heteroskedasticity and autocorrelation-consistent standard error to reduce the effect of heteroskedasticity on the empirical results. The method does not assume homoskedasticity and it does not require knowledge about or functional form of heteroskedasticity such as weighted least squares. Furthermore, it does not need to go through arbitrary transformation of independent variable or computer stimulation (Hayes & Cai, 2007). This method addresses the effect of autocorrelation on t-statistics and p-value without needing to go through trial and error methods (Gujarati, 2014).

3.8 Empirical Results

This section discusses the results of regression analysis in the investigation of the independent and joint effect of corruption with youth bulge, unemployment and educational attainment on political instability.

3.8.1 The Independent Effect of Corruption on Political Instability

Models 1 to 5 in Table 3.2 show the empirical results of the impact of the independent effect of corruption on political instability in panel data, OECD countries, oil countries, democratic countries and the MENA region. Model 2 from Chapter 2 is used as the base model. Corruption is included in the model alongside youth bulge and other determinants of political instability; the results are shown in Model 1, Table 3.2.

Model 1 examines the impact of corruption on political instability in panel data. The independent effect of youth bulge has the expected positive sign and significant coefficient at the 1% level, suggesting that youth bulge enhances political instability. Similarly, the independent effect of corruption has the expected positive sign and significant coefficient at the 1% level, indicating that corruption escalates the risk of political instability. Introducing corruption to the model decreases the coefficient of youth bulge slightly and the adjusted R-square does not show improvement in comparison to Model 2 in Chapter 2. The political risk of corruption is illustrated in the case of Egypt where the Mubarak regime was overthrown in 2011. Increasing

corruption by one standard deviation boosts instability by 0.219 units or 11% of one standard deviation of instability[173]. Egypt could enjoy the level of political stability of Norway when it successfully reduces its current level of corruption by 1050%[174]. Control variables have significant and expected signs except trade openness and urban growth rate.

Model 2 examines the impact of corruption on political instability in OECD countries. The coefficient of the OECD dummy has a negative sign although it is not significant, suggesting that OECD countries face lower political instability risk than non-OECD countries. The coefficient of the interaction term between the OECD dummy and corruption is negative and significant at the 5% level, indicating that an increase in corruption increases political instability; however, the effect is less in OECD countries than non-OECD countries. In other words, the level of development in OECD countries ameliorates the effect of corruption on political instability so that it exposes lower risk on political environment in OECD countries than non-OECD countries. Increasing corruption by one standard deviation in non-OECD countries sparks political instability by 0.393 units or 9% of one standard deviation of political instability[175] while it increases by 0.017 units or 0.482%[176] in OECD countries.

The results indicate that corruption does occur in developed countries like OECD countries; however, its impact on political instability is not that pervasive. It is expected that in these countries corruption take the form of political more than bureaucratic corruption that aims to satisfy strong interest groups such as the media, which can form public perceptions toward a government. Manzetti and Wilson (2007) indicate it is used in democratic countries to smooth political process and as strategy to eliminate political arivals. It is expected to have an impact on political environments through political channels rather than violence. Control variables retain their sign and significance except youth unemployment with an insignificant expected sign.

[173]The coefficient of corruption*(0.675)(its St. dev in Egypt) = 0.219 unit, or 11% =(0.325*100)/(2.935) (the standard deviation of political instability in Egypt).
[174] The difference in average score of instability in both countries (8.026-4.611)/(0.325)(coefficient of corruption)*100=1050%.
[175] The coefficient of corruption* (1.099) (its St. dev in non-OECD)= 0.393 unit, or 9% =(0.358*100)/(4.185) (St. dev of political instability in non-OECD).
[176] (The coefficient of corruption + its coefficient in OECD)=-0.011*(1.617) (its standard deviation in OECD)=0.017 unit or 0.482%=(0.011*100)/(2.280) (the standard deviation of political instability in OECD).

In Model 3 the independent effect of corruption on political instability is examined in democratic countries[177]. Democratic countries face lower risk of political instability than autocratic countries as the coefficient of democracy dummy has a negative sign although is not significant. The independent effect of corruption enhances political instability; however, it exposes lower political risk in democratic countries than autocratic countries, as the interaction coefficient between democracy and corruption is negative but not significant. Increasing the level of corruption in autocratic countries reduces political stability by 0.425 units or 10%[178] of one standard deviation of political instability in comparison to 0.344 units or 8.5% in democratic countries[179].

Corruption serves different objectives in democratic and autocratic countries and produces different consequences on the political environment. In democratic countries one of the objectives is integrating a multitude of different interests and groups into the political system (Leys, 1965). However, characteristics of democracy such as free media and political instruments to discipline corrupted politicans turn corruption into a destablizing factor when it is discovered by the public. Fjelde and Hegre (2014) find in panel data analysis that democratic regimes with low levels of corruption are more stable than those with high levels of corruption. In autocratic countries, a key objective is to provide benefits to powerful interest groups at the expense of the public who might not get the opportunity to be involved in corrupted activities. The adverse impact of corruption on different aspects of a country and absence of political channels to discipline corrupted officials lead to severe conditions of instablity. Anderson and Tverdova (2003) find in panel data analysis a significant positive relationship between the two variables and conclude that desperate conditions can lead the public towards a radical change of system. Youth bulge and control variables have a significant sign except gross tertiary enrolment and urban growth rate that yield an insignificant negative and positive sign, respectively.

Model 4 investigates the impact of the independent effect of corruption on political instability in the MENA region. The MENA region faces higher risk of political instability than non-MENA regions as the coefficient of MENA dummy has a positive sign although is not significant. The independent effect of corruption enhances

[177] The continuous proxy of democracy is replaced by dummy of democracy.
[178] The coefficient of corruption* (0.995) (its St. dev in autocratic countries)= 0.425 unit, or 10% =(0.428*100)/(4.349) (St. dev of political instability in autocratic countries).
[179](The coefficient of corruption + its coefficient in democratic countries)=0.252*(1.368) (its St. dev in democratic countries)=0.344 unit or 8.5%=(0.252*100)/(2.948) (the St. dev of political instability in democratic countries).

political instability; however, its political risk is lower in the MENA region than non-MENA as the coefficient of the interaction term between corruption and MENA dummy has a negative sign and is significant at the 5% level. The MENA region faces lower risk of political instability than non-MENA region by 1.906 units or 56% of one standard deviation of political instability[180] when corruption increases by a standard deviation.

It might be corruption in the MENA region creates a common interest between the public and governments so that its destabilization effect is lower. In the absence of political channels to fight corruption and repression measurements that might be used for public anti-corruption campaigns, the public may be more concerned about reaping potential benefits than fighting the government. Correspondingly, the failure of some governments in the region to improve living standards of their citizens leads governments to tolerate some level of corruption; consequently, the political risk is reduced as the public gains benefits from it. This is in line with Huntington (1968) who argues that corruption offers the public a channel in which to integrate the political and economic system. Furthermore, the author points out that corruption has a stabilization effect because it reduces public pressure on a government. In general, control variables retain their sign and significance.

Model 5 examines the impact of the independent effect of corruption on political instability in oil countries[181]. The independent effect of corruption enhances political instability; however, it exposes lower political risk in oil countries, as the interaction coefficient between oil and corruption is negative and significant at the 1% level. A standard deviation increase in corruption in non-oil countries exposes higher risk on the political environment than oil countries by 0.519 units or 10% of one standard deviation of political instability[182].

The variation in the impact of corruption on the public can explain its lower destabilization effect in oil versus non-oil countries. In non-oil countries the public suffers from a high level of corruption through its adverse impact on their living standards and continuing rises in taxes to finance its activities, which further deteriorates such standards. In oil countries, oil rents offer governments financial

[180] (The coefficient of corruption+ its coefficient in MENA countries)=(-2.438)*(0.782) (its St.dev in MENA countries)=1.906 unit Or 56%=(2.438*100)/(4.366) (the St.dev of political instability in MENA countries)

[181] Continuous proxy of rents from natural resources is replaced by oil dummy.

[182] The coefficient of corruption* (1.354) (its St. dev in non-oil countries)= 0.519 unit, or 10% =(0.384*100)/(3.985) (the St. dev of political instability in non-oil countries).

resources with which to finance patron client networks without taxing the public and it mitigates its adverse impact on the public through distribution expenditure on education, health services and other sectors to pacify the public as suggested by rentier state theory (De Mesquita and Smith, 2009). Fjelde (2009) claims that corruption exposes lower political risk in oil than non-oil countries. Furthermore, the author supports this claim with several anecdotal cases such as Haiti in 1989, Sierra Leone in 1991, Liberia in 1989 and Uganda in 1994, all of which are poor in non-tax revenue and have a high level of corruption that leads to armed conflict.

Model 1 is further examined to elucidate the independent effect of corruption on political instability in different sub-samples[183]. It is examined in countries where the score of corruption is equal to or less than 3 (the average score of corruption over the sample period) versus countries where the score is higher than 3[184]. In both sub-samples it has the expected positive sign; however, it is only significant in countries where the score of corruption is less than or equal to 3[185]. It might be that the public in countries where corruption is more than 3 becomes used to it because of cultural effects or they have no means to fight it. For example, a Transparency International report published in 2016 about corruption in Morocco points out that only 10% of 1200 participants in its annual survey reported corrupt transactions to the designated authority. They are negligent to do so because they believe that no action will be taken or they are afraid of the negative consequences of reporting (Al-Jazeera, 2016). The model is re-tested in countries based on their level of income; the independent effect of corruption in all sub-samples has an insignificant expected positive sign. It is then re-estimated based on the percentage of youth bulge for countries with a percentage between 24% to 31.42% and countries with a percentage more than 31.42%. The independent effect of corruption has an insignificant opposite sign in the former sub-sample and a significant expected positive sign in the latter sub-sample and youth bulge has a significant expected sign in the former sub-sample only.

[183] Results not reported.
[184] The percentage of youth bulge in the first sub-sample is 25% amongst the population and in the second sub-sample it is 30%.
[185] It is estimated in a sub-sample of countries where corruption scores 1,2,4,5,6; the independent effect of corruption has a significant expected positive sign in the sub-sample with a low level of corruption.

Table 3.2 The Independent Effect of Corruption on Political Instability over the Period from 1984 to 2013

Independent variables	Dependent variable: Political Instability				
	Model 1	Model 2	Model 3	Model 4	Model 5
YB	0.184*** (0.028)	0.157*** (0.028)	0.168*** (0.033)	0.180*** (0.028)	0.132*** (0.030)
TYU	0.365* (0.215)	0.327 (0.214)	0.384* (0.205)	0.679*** (0.190)	0.486** (0.220)
Rents	-0.042*** (0.014)	-0.050*** (0.014)	-0.045*** (0.014)	0.022 (0.017)	
TO	-0.003*** (0.001)	-0.002* (0.001)	-0.004*** (0.001)	-0.003** (0.001)	-0.003** (0.001)
GDP growth	-0.343*** (0.071)	-0.352*** (0.071)	-0.343*** (0.806)	-0.306*** (0.067)	-0.356*** (0.077)
RT	-0.004 (0.046)	0.003 (0.046)		-0.151*** (0.052)	-0.048 (0.051)
Corruption	0.325*** (0.095)	0.358** (0.172)	0.428 (0.483)	0.203** (0.092)	0.384*** (0.092)
GTE	-0.011* (0.005)	-0.010 (0.006)	-0.009 (0.006)	-0.005 (0.006)	-0.025*** (0.007)
Log T.pop	1.124*** (0.168)	1.434*** (0.204)	1.120*** (0.172)	1.070*** (0.157)	0.843*** (0.201)
UGR	0.015 (0.043)	0.045 (0.042)	0.011 (0.787)	0.029 (0.043)	0.013 (0.044)
OECD		-0.235 (0.498)			
OECD*Corruption		-0.369** (0.176)			
DD			-0.061 (1.957)		
DD*Corruption			-.0176 (0.491)		
MENA				4.619 (4.806)	
MENA*Corruption				-2.642** (1.300)	
Oil					0.464 (0.822)
Oil*Corruption					-0.827*** (0.279)
Constant	-2.290* (1.490)	-3.076** (1.528)	-2.253 (2.434)	-0.400 (1.423)	0.831 (1.801)
Adjusted R square	28%	30%	29%	38%	25%
Number of observation	617	617	625	617	590
Estimation method	2SLS	2SLS	2SLS	2SLS	2SLS
P-value	0	0	0	0	0
Number of instrument	1	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10%, 5% and 1% level, respectively. YB is youth bulge, TYU is rate of total youth unemployment, Rents is rents from natural resources, TO is trade openness, GDP growth is GDP annual growth, RT is level of democracy, GTE is gross tertiary enrolment, Log T.pop is logarithm of total population and UGR is urban growth rate.

3.8.2 The Joint Effect of Corruption and Youth Bulge on Political instability

Models 6 to 10 in Table 3.3 investigate the impact of youth bulge on political instability moderated by the level of corruption in different contexts. As mentioned earlier the interrelationship between youth bulge, corruption and political instability can go through several channels among other is unhappy interest groups from their gain from corruption provoke desperate youth bulge to act against political regime.

In Model 6 the joint effect between corruption and youth bulge on political instability is investigated in panel data. The independent effect of corruption and youth bulge retains its sign and significance. The joint effect has the expected positive sign but is not significant, suggesting that corruption enhances the impact of youth bulge on political instability. For example, the interaction effect of youth bulge at mean score of corruption 3.316 on political instability in Tunisia is 0.207. Each one standard deviation increase in youth bulge at mean score of corruption deteriorates stability in Tunisia by 0.686 units or 5% of one standard deviation of political instability[186]. The interaction effect of corruption at mean percentage of youth bulge 32.67 on political instability in Tunisia is 0.615; almost double the independent effect of corruption captured in Model 2. When corrupted transactions increase by one standard deviation at mean percentage of youth bulge it boosts political instability in Tunisia by 0.268 units or 15% of one standard deviation of political instability[187].

The existence of a high percentage of youth bulge living in desperate living conditions in the presence of corruption enhances their role on political instability when they find a party able to organize their effort to act against a government. A high level of corruption hurts government ability to provide sufficient quantity and quality of welfare-enhancing public goods and services. Its high level indicates a state weakness to manage and control a society; as a consequence, opportunity theory assumes an individual's opportunity cost to commit political instability incidence decreases (Taydas et al., 2010). Interest groups who are dissatisfied over their meager gains from corruption activities can organize youth against a government. The gains are expected to

[186] The coefficient of youth bulge (0.184) + the coefficient of the joint effect (0.007)*(3.316) (mean score of corruption in Tunisia) =0.207. One standard deviation increase in youth bulge is its coefficient in the joint effect (0.207)* (3.315) (St. dev of youth bulge in Tunisia)= 0.686 unit or 5%= (0.207*100)/(4.187)(St. dev of political instability in Tunisia).

[187] The coefficient of corruption (0.387) + the coefficient of the joint effect (0.007)*(32.678) (mean percentage of youth bulge in Tunisia) =0.615. One standard deviation increases in corruption is its coefficient in the joint effect (0.615)* (0.437) (St. dev of corruption in Tunisia)= 0.268 unit or 15%= (0.615*100)/(4.187)(Standard deviation of political instability in Tunisia).

vary across interest groups because of variation in factors that determine its benefits across interest groups. These factors include the level of personal connection and exclusive knowledge of government operations as indicated by Nice (1986). Le Billon (2003) indicates that competition between interest groups over corruption proceeds enhances instability especially when one or more groups possess military means to challenge a government. Furthermore, the author points out that opposition movements can use corruption accusations and scandals to organize youth bulge against a government under justifaction of addressing their political and economic needs. The joint effect enhances political instability because corruption proceeds may also provide financial means to some interest groups to challenge a government. Medard (1991) cited by Arriola (2009) indicates that the Félix Houphouët-Boigny regime in the Ivory Coast introduced a semicompetitive election in 1980 to remove strong rivals who established independent patronge during their long term in office and replaced them with new and cheaper clients. Control variables retain their sign and significance.

The joint effect between corruption and youth bulge on political instability is further investigated using different sub-samples based on the level of corruption and the percentage of youth bulge to determine the score of corruption that leads to political instability[188]. It finds that a dummy of corruption at score six has a significant positive sign; however, its interaction with youth bulge has an insignificant negative sign. Other dummies have an insignificant positive sign.

In Model 7 the impact of the joint effect of corruption and youth bulge on political instability is examined in OECD and non-OECD countries. The joint effect between corruption and youth bulge in non-OECD countries has a negative sign although it is not significant. Furthermore, the joint effect has a positive sign and is significant at the 10% level in OECD countries. In other words, the role of youth bulge on political instability in the presence of corruption is higher in OECD countries than non-OECD countries. A standard deviation increase in youth bulge at mean score of corruption 3.4 enhances political instability in non-OECD countries by 0.476 units or 2% of one standard deviation of political instability[189] in comparison with 0.929 units or

[188] The results are not reported.

[189] The coefficient of youth bulge (0.173) + the coefficient of the joint effect (-0.026)*(3.4) (mean score of corruption in non-OECD) =0.085. One standard deviation increase in youth bulge is its coefficient in the joint effect (0.085)* (5.628) (St.dev of youth bulge in non-OECD)= 0.476 unit or 2%= (0.085*100)/(4.185)(St. dev of political instability in non-OECD).

8.5% of one standard deviation of political instability in OECD countries[190]. The interaction effect of corruption at mean percentage of youth bulge 30.765% on political instability in non-OECD countries is -0.611. Political instability escalates by 0.671 units or 15% by each one standard deviation decrease in corruption in non-OECD countries[191] while each one standard deviation increase in corruption at mean percentage of youth bulge enhances political instability by 1.524 units or 58% of one standard deviation of political instability in OECD countries[192].

The public in OECD countries is less tolerant of corruption and has appropriate political channels with which to discipline politicians compared to non-OECD countries where corruption in some countries is the norm and they have neither a political channel to discipline politicians nor military means to change government[193]. Alternatively, using corruption as a strategy to stabilize the political environment in democratic countries like OECD countries is more difficult than for autocratic countries. This is because under democracy a government represents the society in general and some policies that aim to benefit some interest groups might come at the expense of others. The failure of corruption to satisfy the majority in democratic countries leads to political instability even with the existence of large interest groups with interests in maintaining the level of political stability. Fjelde and Hegre (2014) find in panel data analysis that democratic regimes with low levels of corruption are more stable than those with high levels of corruption. Control variables retain their sign and significance except youth unemployment that becomes insignificant with an expected positive sign.

Model 8 examines the role of youth bulge on political instability moderated by corruption in democratic environments[194]. The joint effect between corruption and youth

[190] [The coefficient of youth bulge + its coefficient in interaction with OECD]+[(the coefficient of the joint effect +its coefficient in interaction with OECD)*(1.444)(mean score of corruption in OECD)]=0.194. One standard deviation increase in youth bulge is its coefficient in the joint effect (0.194)* (4.784) (St. dev of youth bulge in OECD)= 0.929 unit or 8.5%= (0.194*100)/(2.280)(St. dev of political instability in OECD).

[191] The coefficient of corruption (0.189) + the coefficient of the joint effect (-0.026)*(30.765) mean percentage of youth bulge in non-OECD =0.611. One standard deviation decrease in corruption is its coefficient in the joint effect (0.611)* (1.099) (St.dev of corruption in non-OECD)= 0.671 unit or 15%= (0.611*100)/(4.185)(Standard deviation of political instability in non-OECD).

[192] [The coefficient of corruption + its coefficient in interaction with OECD]+[(the coefficient of the joint effect +its coefficient in interaction with OECD)*(20.376)(mean percentage of youth bulge in OECD)]=1.327. One standard deviation increase in corruption is its coefficient in the joint effect (1.327)* (1.161) (St. dev of corruption in OECD)= 1.524 unit or 58%= (1.327*100)/(2.280)(St. dev of political instability in OECD).

[193] The model is re-estimated by dropping Greece, Hungary, Italy, Poland, Mexico and Turkey where score of corruption is more than twice the joint effect and retains its sign and significance; results not reported.

[194] Continuous proxy of the level of democracy replaced by dummy of democracy.

bulge has a positive sign and is significant at the 5% level. However, the interaction term between democracy and the joint effect is negative and significant at the 5% level. It suggests that a high level of corruption enhances the role of youth bulge on political instability; however, the risk is lower in democratic than autocratic countries. Increasing the percentage of youth bulge at mean score of corruption 2.23 increases political instability in democratic countries by 1.375 units or 6% of one standard deviation of political instability[195] in comparison with 3.65 units or 15% in autocratic countries[196]. The interaction effect of corruption at mean percentage of youth bulge 23.463 on political instability in democratic countries is -0.099. Each one standard deviation decrease in corruption lowers stability by 0.136 units or 3.4% of one standard deviation of political instability[197]. In contrast, the interaction effect of corruption at mean percentage of youth bulge 31.68% on political instability in autocratic countries is 6.54. The level of political instability increases by 6.500 units or 150% of one standard deviation of political instability for each one standard deviation increase in corruption at mean percentage of youth bulge[198].

The impact of the joint effect on political instability is lower in democratic than autocratic countries. In democratic countries public support is more rewarded than the support of interest groups. A government that satisfies interest groups at the expense of public needs and requirements lowers its length of tenure in office. Fjelde and Hegre (2014) point out that accommodating private interests is less rewarded in democratic countries because political support is gained from the majority. The failure to gain public support can be used by the opposition to organize youth to act against the government. Treisman (2000) points out that political competition in democracy exerts

[195] [The coefficient of youth bulge + its coefficient in interaction with democratic countries]+[(the coefficient of the joint effect +its coefficient in interaction with democratic countries)*(2.227)(mean score of corruption in democratic countries)]=0.183. One standard deviation increase in youth bulge is its coefficient in the joint effect (0.184)*(7.511) (St. dev of youth bulge in democratic countries)= 1.375 unit or 6%= (0.184*100)/(2.948)(Standard deviation of political instability in democratic countries).

[196] The coefficient of youth bulge (-0.079) + the coefficient of the joint effect (0.197)*(3.621) mean score of corruption in autocratic countries =0.634. One standard deviation increase in youth bulge is its coefficient in the joint effect (0.634)* (5.754) (St. dev of youth bulge in autocratic countries)= 3.649 unit or 15%= (0.634*100)/(4.349)(St. dev of political instability in autocratic countries).

[197] [The coefficient of corruption + its coefficient in interaction with democratic countries]+[(the coefficient of the joint effect +its coefficient in interaction with democratic countries)*(23.473)(mean percentage of youth bulge in democratic countries)]=-0.099. One standard deviation decrease in corruption is its coefficient in the joint effect (-0.099)*(1.368) (St. dev of corruption in democratic countries)= 0.136 unit or 3.4%= (0.099*100)/(2.948)(St. dev of political instability in democratic countries).

[198] The coefficient of corruption (0.299) + the coefficient of the joint effect (0.197)*(31.682) (mean percentage of youth bulge in autocratic countries) = 6.54. One standard deviation increase in corruption is its coefficient in the joint effect (6.54)* (0.994) (St. dev of corruption in autocratic countries)= 6.5 unit or 150%= (6.54*100)/(4.349)(St. dev of political instability in autocratic countries).

downward pressure on the level of corruption. Alternatively, some authors argue that corruption has a stabilization effect in democratic countries because it integrates different interests and groups into the political system (Leys, 1965) or when the incumbent sets public economic policies to eleminate political rivals and stay in office (Manzetti and Wilson, 2007). This might be a source of political instability in the presence of youth bulge because dissatisfied interest groups or those whose interests are negatively affected from incumbent policies have strong interest in provoking youth bulge to act against the incumbent. In autocratic countries the adverse impact of youth bulge on political environment in the presence of corruption is higher than democratic countries. It might be that youth bulge have no equal opportunity to involve themselves in corruption like powerful interest groups and they suffer from its adverse impact on their living standards. Widner (1992) cited by Arriola (2009) indicates that Daniel Arap Moi in Kenya used public resources to form allies among politicans. Under such conditions, corruption fails to provides channels of free movement and distribution of public resources among groups in society and there is no alternative channel to do so (Becquart-Leclercq, 1989). This motivates youth bulge to rely on violence to press for reform. Huntington (1968) argues that the failure of corruption to reduce public pressure on a government leads to political instability. Control variables have a significant expected sign except gross tertiary enrolment and urban growth rate that have insignificant negative and positive signs, respectively.

Model 9 examines the impact of the joint effect between corruption and youth bulge on political instability in the MENA region. The joint effect has a positive sign although it is insignificant; however, it exposes higher risk in MENA as the interaction term between the joint effect and MENA dummy has a positive sign and significant coefficient at the 1% level. In other words, the MENA region is at higher risk of political instability than non-MENA regions due to the presence of a high percentage of youth bulge alongside a high level of corruption. The interaction effect of youth bulge at mean score of corruption 3.509 on political instability in the MENA region is 1.283. Each one standard deviation increase in the percentage of youth bulge at mean score of corruption enhances political instability in the region by 5.59 units or 29% of one standard deviation of political instability[199] while it increases by 1.995 units or 7% in

[199][The coefficient of youth bulge + its coefficient in interaction with MENA region]+[(the coefficient of the joint effect + its coefficient in interaction with MENA region)*(3.509)(mean score of corruption in MENA region)]=1.283. One standard deviation increase in youth bulge is its coefficient in the joint effect (1.283)* (4.364) (St.dev of youth bulge in MENA region)= 5.59 unit or 29%= (1.283*100)/(4.366)(St. dev of political instability in MENA region).

non-MENA regions[200]. The interaction effect of corruption at mean percentage of youth bulge 31.94% on political instability in MENA is 13.839. Political instability increases by 10.822 units or 317% of one standard deviation of political instability by each one standard deviation increase in corruption at mean percentage of youth bulge in the region[201] while it increases by 1.682 units or 31% in non-MENA regions[202].

The presence of a high percentage of youth bulge in the MENA region creates pressure on the socioeconomic environment and the presence of a high level of corruption in the region further deteriorate already poor conditions. Furthermore, a low level of democracy fails to offer political channels in which to raise their demands peacefully nor to screen out their needs. Additionally, youth bulge lack the required financial resources to become involve in corrupted transactions. All these factors together provide a favorable environment for some interest parties to organize their effort against governments, such as the Muslim brotherhood movement in Egypt. The movement played a vital role in organizing youth bulge effort against the Mubarak regime in late 2010. Control variables retain their sign and significance.

Model 10 investigates the impact of the joint effect between corruption and youth bulge on political instability in oil countries[203]. The joint effect between corruption and youth bulge enhances political instability; however, it exposes lower risk on the political environment in oil countries as the interaction term between the joint effect and oil dummy has a negative sign and is significant at the 1% level. Non-oil countries face a higher risk of political instability than oil countries, enhanced by 1.674 units or 6% of one standard deviation of political instability when the percentage of youth bulge increases by a standard deviation at mean score of corruption[204]. Similarly,

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[200]The coefficient of youth bulge (0.217) + the coefficient of the joint effect (0.027)*(2.949) mean score of corruption in non-MENA countries =0.296. One standard deviation increase in youth bulge is its coefficient in the joint effect (0.296)* (6.743) (St. dev of youth bulge in non-MENA countries)= 1.995 unit or 7%= (0.296*100)/(3.977)(St. dev of political instability in non-MENA countries).

[201][The coefficient of corruption + its coefficient in interaction with MENA countries]+[(the coefficient of the joint effect +its coefficient in interaction with MENA countries)*(31.944)(mean percentage of youth bulge in MENA countries)]=13.839. One standard deviation increase in corruption is its coefficient in the joint effect (13.839)*(0.782) (St. dev of corruption in MENA countries)=10.822 unit or 317%= (13.839*100)/(4.366)(St. dev of political instability in MENA countries).

[202]The coefficient of corruption (0.414) + the coefficient of the joint effect (0.027)*(29.03) (mean percentage of youth bulge in non-MENA countries)= 1.197. One standard deviation increases in corruption is its coefficient in the joint effect (1.197)* (1.405) (St. dev of corruption in non-MENA countries)= 1.682 unit or 31%= (1.197*100)/(3.977)(St. dev of political instability in non-MENA countries).

[203] Continuous proxy of rents from natural resources is replaced by oil dummy.

[204]The coefficient of youth bulge (0.140) + the coefficient of the joint effect (0.027)*(2.939) mean score of corruption in non-oil countries =0.219. One standard deviation increase in youth bulge is its coefficient in the joint effect (0.219)* (7.635) (St. dev of youth bulge in non-oil countries)= 1.674 unit or 7%= (0.219*100)/(3.985)(St. dev of political instability in non-oil countries).

non-oil countries face a higher risk of political instability than oil countries by 1.851 units or 34% of one standard deviation of political instability when corruption increases by a standard deviation at mean percentage of youth bulge[205].

In oil countries, the influence of corruption in the role of youth bulge on political instability is lower than non-oil countries. Oil rents is an attractive income source to many interest groups (Smith, 2004), however the low level of democracy does not offer alternative political channels to public office (Sandbakken, 2006). Therefore, governments in these countries tolerate some level of corruption in the form of patron-client networks to reduce the political risk of some interest groups (Smith, 2004). Similary, they succeed in reducing the political risk of youth bulge through different forms of distribution expenditure as stated by rentier state theory. From general reading of the author of this PhD thesis, some oil countries in the MENA region experienced youth bulge demonstrations in the aftermath of the so-called the Arab spring event in late 2010. Their requirements were more employment and educational opportunties and an effective anti-corruption strategy. These countries increase employment and educational opportunties which reduces anti-corruption demand. The government succeeds in eliminating their risk on political environment and maintains its extensive patron-client network at the same time. Control variables have a significant sign except the level of democracy and urban growth rate

[205] The coefficient of corruption (0.590) + the coefficient of the joint effect (0.027)*(28.8) (mean percentage of youth bulge in non-oil countries)= 1.367. One standard deviation increase in corruption is its coefficient in the joint effect (1.367)* (1.354) (St. dev of corruption in non-oil countries)= 1.851 unit or 34%= (1.367*100)/(3.985)(St. dev of political instability in non-oil countries).

Table 3.3 The Joint Effect of Youth Bulge and Corruption on Political Instability over the Period from 1984-2013

Independent variables	Dependent variable: Political Instability				
	Model 6	Model 7	Model 8	Model 9	Model 10
YB	0.184*** (0.029)	0.173*** (0.034)	-0.079 (0.103)	0.217*** (0.029)	0.140*** (0.029)
Corruption	0.387* (0.229)	0.189 (0.304)	0.299 (0.416)	0.414** (0.211)	0.590*** (0.230)
Corruption*YB	0.007 (0.020)	-0.026 (0.031)	0.197** (0.093)	0.027 (0.018)	0.027 (0.020)
OECD		-1.674*** (0.408)			
OECD*YB		-0.038 (0.042)			
OECD*Corruption		0.303 (0.406)			
OECD*Corruption*YB		0.067* (0.039)			
DD			-0.516 (0.574)		
DD*YB			0.280*** (0.102)		
DD*Corruption			-0.211 (0.460)		
DD*Corruption*YB			-0.205** (0.096)		
MENA				-1.483* (0.900)	
MENA*YB				-.758*** (0.119)	
MENA*Corruption				-3.185*** (0.566)	
MENA*Corruption*YB				0.493*** (0.145)	
Oil					0.411 (0.820)
Oil*YB					-0.019 (0.091)
Oil*Corruption					-3.161* (0.953)
Oil*YB*Corruption					-.354*** (0.096)
Constant	3.743** (1.466)	3.053* (1.601)	3.946*** (1.153)	4.710*** (1.352)	4.924*** (1.601)
Adjusted R square	29%	31%	34%	39%	30%
Number of observation	617	617	625	617	590
Estimation method	2SLS	2SLS	2SLS	2SLS	2SLS
P-value	0	0	0	0	0
Number of instrument	1	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesises. *, **, *** Indicate significance at the 10%, 5 % and 1% level, respectively. All models include all the control variables that are included in Models in Table 3.2 (results are not reported). For space restriction only the results of variables of interest is reported.

3.8.3 The Joint Effect of Corruption and Youth Unemployment on Political Instability

Models 11 to 15 in Table 3.4 examine the impact of the joint effect of corruption and youth unemployment on political instability.

The impact of the joint effect of corruption and youth unemployment on political instability is examined on panel data in Model 11. The independent effect of youth unemployment enhances political instability as it has the expected positive sign but is not significant. Similarly, the independent effect of corruption has the expected positive sign and is significant at the 1% level. The joint effect between the two variables, contrary to expectations, has a negative sign and is significant at the 1% level [206]. This suggests that a decreased level of corruption and low rate of unemployment enhances political instability. In a country like Ethiopia where the score of corruption is high, the interaction effect of youth unemployment at mean score of corruption 3.79 on political instability is -2.077. Decreasing youth unemployment by one standard deviation at mean score of corruption enhances political instability by 2.528 units or 38%[207]. The interaction effect of corruption at mean percentage of youth unemployment 2.422% on political instability in Ethiopia is -0.986. Decreasing the level of corruption by one standard deviation in Ethiopia enhances political instability by 0.443 units or 18% of one standard deviation of political instability[208].

The proxy used in this study to measure corruption considers political corruption and bureaucratic corruption; however, more attention is given to former. It might be that the level of political corruption is low but bureaucratic corruption is high. Under such a scenario, companies might prefer to operate underground to avoid cumbersome bureaucratic procedures and consequently, labor forces are absorbed by underground sectors. Friedman et al. (2000) find in cross sectional analysis that government size measured by the percentage of taxes to general revenue tends to be small in countries with a high level of corruption because many firms prefer to operate underground to

[206] The model is re-estimated by including the interaction term between quadratic term of corruption and youth unemployment. The linear interaction of corruption and non-linear interaction with youth unemployment have a significant negative sign.

[207] The coefficient of youth unemployment (0.167) + the coefficient of the joint effect (-0.504)*(3.790) (mean score of corruption in Ethiopia) =-2.077. One standard deviation decrease in youth unemployment is its coefficient in the joint effect (-2.077)* (1.217) (St. dev of youth unemployment in Ethiopia)= 2.528 unit or 38%= (2.077*100)/(5.395)(St. dev of political instability in Ethiopia).

[208] The coefficient of corruption (0.234) + the coefficient of the joint effect (-0.504)*(2.422)(mean rate of youth unemployment in Ethiopia)=-0.986. One standard deviation decrease in corruption is its coefficient in the joint effect (-0.986)* (0.448) (St. dev of corruption in Ethiopia)= 0.442 unit or 18%= (-0.986*100)/(5.395)(St. dev of political instability in Ethiopia).

avoid poor bureaucratic quality. The flourishing underground economy constitutes tax lost from an individual and corporate income. Consequently, it makes it difficult for a government to provide sufficient quality and quantity of public goods and services. This shifts the political risk from unemployed youth to the failure of government to meet public expectations. Alternatively, a country may reach full employment and youth could turn their pressure on government to address other needs [209]. Youth bulge and control variables have a significant sign except urban growth rate and the level of democracy.

The impact of the joint effect is further investigated by creating two sub-samples based on the average score of corruption (which is 3 over the sample period)[210]. The first sub-sample includes countries where the average score in corruption is less than or equal to 3 and the second sub-sample has a value more than 3. The joint effect in both sub-samples has an insignificant negative sign.

Model 12 investigates the impact of the joint effect on political instability in OECD countries. The joint effect of corruption and youth unemployment has a negative and significant coefficient suggesting that decreasing corruption and a low rate of unemployment enhances political instability. However, it has a positive impact in OECD countries as the interaction term between OECD and the joint effect has a positive sign and is significant at the 1% level. In other words, the negative sign of the joint effect on political instability becomes positive in OECD countries. Each one standard deviation increase in youth unemployment at mean score of corruption 1.444 enhances political instability in OECD countries by 0.714 units or 56% of one standard deviation of political instability[211]. In non-OECD countries, decreasing unemployment by a single standard deviation at mean score of corruption enhances political instability in non-OECD countries by 1.655 units or 59% of one standard deviation of political instability[212]. Similarly, the interaction effect of corruption exposes higher risk on

[209] The impact of the joint effect is further investigated in one period lag of corruption, one period lag of unemployment and the joint effect of quadratic term of corruption and unemployment; the joint effect between corruption and unemployment retain its sign and significance across all models; the results are not reported.

[210] Results are not reported.

[211] [The coefficient of youth unemployment + its coefficient in interaction with OECD]+[(the coefficient of the joint effect +its coefficient in interaction with OECD)*(1.444)(mean score of corruption in OECD)]=1.269. One standard deviation increase in youth unemployment is its coefficient in the joint effect (1.269)* (0.563) (St. dev of youth unemployment in OECD)= 0.714 unit or 56%= (1.269*100)/(2.280)(St. dev of political instability in OECD).

[212] The coefficient of youth unemployment (-0.175) + the coefficient of the joint effect (-0.662)*(3.4) (mean score of corruption in non-OECD) =-2.426. One standard deviation decrease in youth

political environments in OECD than non-OECD countries. Each one standard deviation increase in corruption at mean percentage of unemployment 2.624% enhances political instability in OECD countries by 0.075 units or 3% of one standard deviation of political instability[213]. In non-OECD countries, each one standard deviation decrease in corruption at mean percentage of unemployment enhances political instability by 1.796 units or 39% of one standard deviation of political instability[214].

In general, OECD countries experience less political instability than their counterpart non-OECD countries; however, the level of corruption and youth unemployment in some OECD countries is equivalent to that perceived level in some non-OECD countries. For example, there is no significant difference in the level of corruption in Italy, Mexico, and Turkey (their average score is 2.8, 3.4 and 3.3 respectively) than its level in their counterpart non-OECD countries (the average score in these countries is 3.4). The presence of corruption in the previously mentioned OECD countries enhances the risk of political instability in the presence of unemployed rates of 3.37%, 2% and 2.85% in Italy, Mexico and Turkey, respectively. Overall, the average unemployment rate over the sample period is similar between OECD countries 2.65% and non-OECD countries 2.77%. Despite the low level of corruption in OECD countries, negligent increases in its level amidst high youth unemployment can increase unemployed youth dissatisfaction that enhances political instability. For example, in its coverage of 2016 prospects for the Abbott government in South Australia, the Australian Broadcast Center (ABC, 2015) reported that support of local industries and jobs formed the main strategy used by the government to increase public support.

The negative joint effect in non-OECD countries suggests that these countries take extraordinary action to reduce unemployment such as creating public employment. This action reduces the political risk of unemployment; however, it creates other sources of political risk from financial pressures to meet wage bills (Stevenson, 1992) and pressures from those searching for employment and lobbying to create more public

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unemployment is its coefficient in the joint effect (2.426)* (0.682) (St. dev of youth unemployment in non-OECD)= 1.655 unit or 59%= (2.426*100)/(4.185)(St. dev of political instability in non-OECD).

[213] [The coefficient of corruption + its coefficient in interaction with OECD]+[(the coefficient of the joint effect +its coefficient in interaction with OECD)*(2.624)(mean percentage of unemployment in OECD)]=0.06. One standard deviation increase in corruption is its coefficient in the joint effect (0.06)* (1.161) (St. dev of corruption in OECD)= 0.075 unit or 3%= (0.06*100)/(2.280)(St. dev of political instability in OECD).

[214] The coefficient of corruption (0.198) + the coefficient of the joint effect (-0.662)*(2.768) (mean percentage of unemployment in non-OECD) =-1.634. One standard deviation decrease in corruption is its coefficient in the joint effect (-1.634)* (1.099) (St. dev of corruption in non-OECD)= 1.796 unit or 39%= (1.634*100)/(4.185)(St. dev of political instability in non-OECD).

employment opportunities. All of these force governments to create more employment opportunities to stabilize the political environment as indicated by Gelb, Knight, and Sabot (1991). Meeting financial pressures and continuing to create public employment forces a government to take financial measures such as freezing salary growth or allowing currency to depreciate as indicated by Stevenson (1992). The adverse impact of these measures on standards of living of public employees and a low level of corruption to assist their income culminates in anger against the government. Youth bulge and control variables retain their sign and significance.

The impact of the joint effect on political instability in democratic environments is examined in Model 13[215]. The independent effect of youth unemployment enhances political instability and exposes higher risk in democratic than autocratic countries as the interaction term between democracy and youth unemployment has a positive sign although it is not significant. Corruption constitutes a higher risk on political environment in democratic than autocratic countries as the interaction term between democracy and corruption has a positive sign but is not significant. Furthermore, the joint effect has a negative sign and significant coefficient at the 1% level; however, its impact is lower in democratic countries as the interaction term between democracy and the joint effect has a positive sign and is significant at the 1% level. Put differently, the impact of youth unemployment on political instability moderated by corruption is higher in democratic than autocratic countries. The interaction effect of youth unemployment at mean score of corruption 3.621 on political instability in autocratic countries is -4.404. Decreasing unemployment by one standard deviation at mean score of corruption escalates political instability in autocratic countries by 3.259 units or 101% of one standard deviation of political instability[216] while in democratic countries each one standard deviation increase in youth unemployment at mean score of corruption 2.227 produces further risk of political instability by 0.468 units or 28% of one standard deviation of political instability[217]. The interaction effect of corruption at

[215] Continuous proxy of the level of democracy is replaced by dummy of democracy.

[216] The coefficient of youth unemployment (0.422) + the coefficient of the joint effect (-1.333)*(3.621) (mean score of corruption in autocratic countries) =-4.404. One standard deviation decrease in youth unemployment is its coefficient in the joint effect (-4.404)* (0.740) (St. dev of youth unemployment in autocratic countries)= 3.259 unit or 101%= (4.404*100)/(4.349)(St. dev of political instability in autocratic countries).

[217] [The coefficient of youth unemployment + its coefficient in interaction with democratic countries]+[(the coefficient of the joint effect +its coefficient in interaction with democratic countries)*(2.227)(mean score of corruption in democratic countries)]=0.811. One standard deviation increase in youth unemployment is its coefficient in the joint effect (0.811)*(0.578) (St. dev of youth unemployment in democratic countries)= 0.468 unit or 28%= (0.811*100)/(2.948)(St. dev of political instability in democratic countries).

mean percentage of unemployment 2.696 on political instability in autocratic countries is -3.651. Each one standard deviation decrease in corruption at mean percentage of unemployment increases political instability by 3.628 units or 84% of one standard deviation of political instability[218] whereas each one standard deviation increase in corruption at mean percentage of unemployment enhances political instability in democratic countries by 0.015 units or 0.373% of one standard deviation of political instability[219].

In autocratic countries the negative sign of the independent effect of corruption makes the impact of the joint effect negative. It might be that these countries absorb unemployment in their security forces; however, financial pressures to meet their wages forces governments to decrease the wage level or to take other financial measures with adverse impacts on living standards. The adverse impact of wage bills on economic growth leads to a low level of economic opportunities such that private agents have no interest in paying bribes. Furthermore, employment in security forces does not offer abundant rent seeking opportunities, or they may be offer negligent amount in comparison with other posts such as tax collectors or posts in the customs department. A combination of poor living standards of employees in security forces and low levels of corruption to assist their legal wages enhances political instability. Youth bulge and control variables retain their sign and significance.

The impact of youth unemployment moderated by corruption on political instability in the MENA region is examined in Model 14. The independent effect of youth unemployment enhances political instability; however, it exposes lower risk in the MENA region as the interaction term between MENA and youth unemployment has a negative sign and is significant at the 1% level. Similarly, the independent effect of corruption enhances political instability; however, it turns into a negative sign in the MENA region as the interaction term between corruption and MENA has a negative sign and is significant at the 1% level. The joint effect between the two variables has a

[218] The coefficient of corruption (-0.057) + the coefficient of the joint effect (-1.333)*(2.696) (mean percentage of unemployment in autocratic countries) =-3.651. One standard deviation decrease in corruption is its coefficient in the joint effect (3.651)* (0.994) (St. dev of corruption in autocratic countries)= 3.628 unit or 84%= (3.651*100)/(4.349)(St. dev of political instability in autocratic countries).

[219] [The coefficient of corruption + its coefficient in interaction with democratic countries]+[(the coefficient of the joint effect + its coefficient in interaction with democratic countries)*(2.732)(mean percentage of unemployment in democratic countries)]=0.011. One standard deviation increase in corruption is its coefficient in the joint effect (0.011)* (1.368) (St. dev of corruption in democratic countries)= 0.015 unit or 0.373%= (0.011*100)/(2.948)(St. dev of political instability in democratic countries).

negative sign; however, it has a positive impact in the MENA region, as the interaction term between MENA and the joint effect is positive and significant at the 1% level. In other words, corruption enhances the adverse impact of unemployment on political environment and it is more risky in the MENA than non-MENA regions. The interaction effect of unemployment on political instability in the MENA region at mean score of corruption 3.509 is 31.385. The MENA region faces extra risk of political instability by 17.606 units or 719% of one standard deviation of political instability when unemployment among its youth increases by one standard deviation at mean score of corruption[220]; in contrast, the level of stability worsens by 0.176 units or 7% of one standard deviation of political instability in non-MENA regions when unemployment decreases by one standard deviation at mean score of corruption[221]. The interaction effect of corruption on political instability in the MENA region at mean percentage of unemployment 3.049% is 24.505. Each one standard deviation increase in corruption at mean percentage of unemployment intensifies political instability by 18 units or 551% of one standard deviation of political instability in the region[222]; in contrast, stability deteriorates by 0.828 units or 15% of one standard deviation of political instability for each one standard deviation decrease in corruption in non-MENA regions[223].

A high level of corruption and absence of checks and balances[224] in the MENA region lead to significant adverse impacts on different aspects, one of which is sectors expected to generate employment opportunities. Its high level in the region prevents governments from reducing their involvement in the economic environment. Ross et al. (2011) indicate privatization is characterized by a high level of corruption, patronage

[220][The coefficient of youth unemployment + its coefficient in interaction with MENA countries]+[(the coefficient of the joint effect +its coefficient in interaction with MENA countries)*(3.509)(mean score of corruption in MENA countries)]=31.385. One standard deviation increase in youth unemployment is its coefficient in the joint effect (31.385)*(0.561) (St. dev of youth unemployment in MENA countries)= 17.606 unit or 719%= (31.385*100)/(4.366)(St. dev of political instability in MENA countries).

[221] The coefficient of youth unemployment (0.548) + the coefficient of the joint effect (-0.279)*(2.949) mean score of corruption in non-MENA countries =-0.275. One standard deviation decrease in youth unemployment is its coefficient in the joint effect (-0.275)* (0.643) (St. dev of youth unemployment in non-MENA countries)= 0.176 unit or 7%= (-0.275*100)/(3.977)(St. dev of political instability in non-MENA countries).

[222] [The coefficient of corruption + its coefficient in interaction with MENA countries]+[(the coefficient of the joint effect +its coefficient in interaction with MENA countries)*(3.049)(mean percentage of unemployment in MENA countries)]=24.052. One standard deviation increase in corruption is its coefficient in the joint effect (24.052)* (0.782) (St. dev of corruption in MENA countries)= 18 unit or 551%= (24.052*100)/(4.366)(St. dev of political instability in MENA countries).

[223] The coefficient of corruption (0.161) + the coefficient of the joint effect (-0.279)*(2.691) (mean percentage of unemployment in non-MENA countries) =-0.589. One standard deviation decrease in corruption is its coefficient in the joint effect (-0.589)* (1.405) (St. dev. of corruption in non-MENA countries)= 0.828 unit or 15%= (-0.589*100)/(3.977)(St. dev of political instability in non-MENA countries).

[224] The average score of democracy in the region is 5 in comparison with 14 in non-MENA regions.

and lack of motivation and continuity, especially in low and medium size economies such as Egypt, Yemen and Tunisia. This prevents the establishment of a strong private sector that can be an engine of economic growth and consequently generate employment. This decreases per capita income growth and creates mounting pressure on governments to act as employer of last resort; otherwise, political instability increases.

Corruption has an adverse impact on already poor economic environments in the region. It increases uncertainty in economic environment and its high level in the region hinders investment decisions of productive sectors. It also has an adverse impact on sectors that can absorb a substantial number of human resources and are capable of feeding economic growth, like entrepreneurship. A combination of high barrier levels preventing the establishment of small and medium enterprises and unfair competition practices breeds a high level of corruption that drives talent away from the entrepreneurship sector (O'Sullivan et al., 2011). This leads to sluggish economic growth and increases unemployment to 25% in the region. Poor economic environments that fail to meet expectations raised by a high level of educational attainment in the region (the average in the region over the sample period is 19% versus 27% in non-MENA) are expected to lead to political instability in the region. This is because unemployment deprives youth in the region from gaining access to housing and other goods and services that require permanent incomes for their procurement and are necessary for establishment of families (Chaaban, 2013). Youth bulge and control variables have a significant sign except rents from natural resources, gross tertiary enrolment, and urban growth rate.

Model 15 examines the impact of the joint effect on political instability in oil countries. Oil countries face higher political risk from unemployment than non-oil countries as the interaction term between oil and unemployment has a positive sign but is insignificant. The independent effect of corruption enhances political instability; however, it constitutes lower risk in oil countries as the interaction term between oil and corruption has a negative sign and is significant at the 5% level. The joint effect has a negative sign and is significant at the 1% level and it is impact is substantially higher in oil countries. In other words, a low level of corruption and unemployment enhances political instability and the effect is substantially higher in oil countries than non-oil countries. The interaction effect of unemployment on political instability in oil countries at mean score of corruption 3.627 is -5.74. Reduction in the rate of unemployment by

one standard deviation at mean score of corruption enhances political instability by 3.421 units or 141% of one standard deviation of political instability[225];while it only increases by 0.660 units or 26% of one standard deviation of political instability in non-oil countries[226]. The interaction effect of corruption on political instability in oil countries at mean rate of unemployment 2.7% is -6.192. Decreasing corruption by a standard deviation at mean rate of unemployment enhances political instability by 6.575 units or 152% of one standard deviation of political instability[227] in comparison with 1.307 units or 24% of one standard deviation in non-oil countries[228].

The negative sign of the joint effect in oil and non-oil countries suggests that an economy might reach full employment and that there is a shortage in human resources in the labor market. Competition over human resources drives their recruitment costs up, which in turn increases the inflation rate in a country. Hence, economists suggest that some level of unemployment is required within the economy so that full employment does not have adverse impacts on economic growth. High inflation rate have adverse impacts on private sector productivity and living standards of the public which hurts economic stability and consequently, political stability (Hubbard, 2011). It reduces the profitability of productive sectors that in turn decreases public revenue, especially in non-oil countries. Furthermore, full employment prevents youth from seeking further education or vocational training. This might be a prospective source of political instability over the long run as a result of changes in economic structure that produce new requirements for some qualifications while past qualifications no longer fit with the new economic structure. Control variables have a significant sign except for the level of democracy and urban growth rate.

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[225] [The coefficient of youth unemployment + its coefficient in interaction with oil dummy]+[(the coefficient of the joint effect +its coefficient in interaction with oil dummy)*(3.627)(mean score of corruption in oil countries)]=-5.74. One standard deviation decrease in youth unemployment is its coefficient in the joint effect (5.74)*(0.595) (St. dev of youth unemployment in oil countries)= 3.421 unit or 141%= (5.74*100)/(4.072)(St. dev of political instability in oil countries).

[226] The coefficient of youth unemployment (0.318) + the coefficient of the joint effect (-0.463)*(2.939)(mean score of corruption in non-oil countries) =-1.042. One standard deviation decreases in youth unemployment is its coefficient in the joint effect (-1.042)* (0.633) (St. dev of youth unemployment in non-oil countries)= 0.660 unit or 26%= (-1.042*100)/(3.985)(St. dev of political instability in non-oil countries).

[227][The coefficient of corruption + its coefficient in interaction with oil dummy]+[(the coefficient of the joint effect +its coefficient in interaction with oil dummy)*(2.7)(mean percentage of unemployment in oil countries)]=-6.192. One standard deviation decrease in corruption is its coefficient in the joint effect (6.192)* (1.62) (St. dev of corruption in oil countries)= 6.575 unit or 152%= (6.192*100)/(4.072)(St. dev of political instability in oil countries).

[228] The coefficient of corruption (0.300) + the coefficient of the joint effect (-0.463)*(2.736) (mean percentage of unemployment in non-oil countries) =-0.966. One standard deviation decrease in corruption is its coefficient in the joint effect (-0.966)* (1.354) (St. dev of corruption in non-oil countries)= 1.307 unit or 24%= (-0.966*100)/(3.985)(St. dev of political instability in non-oil countries).

Table 3.4 The Joint Effect of Youth Unemployment and Corruption on Political Instability over the Period 1984-2013

Independent variables	Dependent variable: Political Instability				
	Model 11	Model 12	Model 13	Model 14	Model 15
YB	0.168*** (0.028)	0.154*** (0.029)	0.155*** (0.033)	0.186*** (0.029)	0.122*** (0.029)
TYU	0.167 (0.224)	-0.175 (0.357)	0.422 (0.735)	0.548*** (0.226)	0.318 (0.223)
Corruption	0.234*** (0.088)	0.198 (0.181)	-0.057 (0.410)	0.162* (0.091)	0.300*** (0.084)
Corruption*TYU	-0.503*** (0.121)	-0.662*** (0.206)	-1.333*** (0.461)	-0.279** (0.124)	-0.463*** (0.128)
OECD		-1.183*** (0.319)			
OECD*TYU		1.411*** (0.458)			
OECD*Corruption		-0.194 (0.198)			
OECD*Corruption*TYU		0.685*** (0.238)			
DD			-0.865 (0.552)		
DD*TYU			0.516 (0.789)		
DD*Corruption			0.224 (0.417)		
DD*Corruption*TYU			1.276*** (0.464)		
MENA				1.106 (1.603)	
MENA*Corruption				-8.813*** (2.562)	
MENA*TYU				-6.801*** (1.630)	
MENA*Corruption*TYU				11.005*** (3.083)	
Oil					-0.593 (0.712)
Oil*Corruption					-1.421** (0.586)
Oil*TYU					0.754 (1.118)
Oil*Corruption*TYU					-1.415* (0.731)
Constant	.372 (1.407)	-.491 (1.442)	1.099 (1.318)	2.073 (1.372)	3.645** (1.464)
Adjusted R square	31%	33%	34%	38%	30%
Number of observation	617	617	625	617	590
Estimation method	2SLS	2SLS	2SLS	2SLS	2SLS
P-value	0	0	0	0	0
Number of instrument	1	1	1	1	
P-value (the validity test of one year lage of GDP growth as instrument of GDP growth)	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10%, 5% and 1%, level respectively. All models include all the control variables, included in models in Table 3.2 (results are not reported). For space restrictions only the results of variables of interest are reported.

3.8.4 The Joint Effect of Corruption and Gross Tertiary Enrolment on Political instability

Models 16 to 20 in Table 3.5 examine the impact of the joint effect of corruption and gross tertiary enrolment on political instability in panel data, OECD countries, democratic countries, oil countries, and the MENA region.

Model 16 investigates the impact of the joint effect on political instability in panel data set. The independent effect of corruption has a positive sign and is significant at the 1% level. The independent effect of gross tertiary enrolment has a negative sign and is significant at the 1% level, suggesting that a low level of gross tertiary enrolment enhances political instability. The joint effect has a negative sign and is significant at the 5% level. It indicates that a low level of gross tertiary enrolment reduces the impact of corruption on political instability. The interaction effect of corruption on political instability at mean percentage of gross tertiary enrolment 21.623% is 0.334. Increasing the level of corruption by one standard deviation at mean percentage of gross tertiary enrolment enhances political instability by 0.424 units or 8% of one standard deviation of political instability[229]. The interaction effect of gross tertiary enrolment at mean score of corruption 3.022 on instability is -0.06. Each one standard deviation reduction in gross tertiary enrolment at mean score of corruption escalates political instability by 1.307 units or 1.5% of one standard deviation of instability[230].

The empirical results suggest that a low level of educational attainment in a country decreases the adverse impact of corruption on political environment. Low educational attainment indicates that the public lacks the knowledge and civic skills to observe corruption activities. Knowledge is required because corruption flourishes in some sectors that require specific knowledge, like military expenditure. Henderson and Singer (2000) indicate that public expenditure in corrupted countries is typically allocated to military expenditure. Its low level does not produce civic skills that create pressure on a government to move to democracy; and consequently increased public scrutiny on government operation (Truex, 2011). Its low level prevents the public from

[229] The coefficient of corruption (0.572)- coefficient of joint effect (-0.011)*(21.62) mean percentage of gross tertiary enrolment 0.334. One standard deviation increase in the coefficient of corruption in the joint effect (0.334)*(1.353) (St. dev of corruption) = 0.424 unit or 8%= (0.334*100)/(4.030)(St. dev of political instability).

[230] The coefficient of gross tertiary enrolment (-0.027)- coefficient of joint effect (-0.011)*(3.022) mean score of corruption -0.06. One standard deviation decrease in the coefficient of gross tertiary enrolment in the joint effect (-0.06)*(21.699) (St. dev of gross tertiary enrolment) =1.307 unit or 1.5%= (0.06*100)/(4.030)(St. dev of political instability).

distinguishing between public and private roles. This frees government operations from public scrutiny required to notice and punish corrupted officials (Treisman, 2000). Descriptive statistics from the data set used in this research shows that the average educational attainment in the Congo Democratic Republic is 3.5% (versus 27% in the entire data set) and it forms the region containing the most corrupted countries in the world. On other hand, Finland is among the highest countries worldwide in terms of educational attainment and the level of corruption. In summary, a low level of educational attainment makes it easier for the political elite to be involved in corruption activities. Insufficient civic skills fail to create pressure on governments to introduce democracy that would make them accountable to the public. Youth bulge and control variables have a significant sign except level of democracy and urban growth rate.

The impact of gross tertiary enrolment moderated by corruption on political instability in OECD countries is examined in Model 17. The joint effect has a negative sign and is significant at the 1% level; however, its impact is lower in OECD countries as the interaction term between the joint effect and OECD dummy has a positive sign and is significant at the 10% level. In other words, a low level of gross tertiary enrolment lowers the impact of corruption on political instability; however, its impact is lower in OECD countries than non-OECD countries. A high level of gross tertiary enrolment makes the interaction effect of corruption a negligent, negative impact on political instability in OECD countries. The interaction effect of corruption at mean percentage of gross tertiary enrolment 40.22% on political instability in OECD countries is -0.064. Reduction by one standard deviation in corruption at mean percentage of gross tertiary enrolment enhances political instability in OECD countries by 0.074 units or 3% of one standard deviation of political instability[231] while in non-OECD countries increasing corruption by one standard deviation at mean percentage of gross tertiary enrolment moves political instability upwards by 0.247 units or 5% of one standard deviation of instability[232]. The interaction effect of gross tertiary enrolment at mean score of corruption 1.444 on political instability in OECD countries is -0.017. Each one standard deviation decrease in gross tertiary enrolment at mean score of

[231][The coefficient of corruption + its coefficient in interaction with OECD]+[(the coefficient of the joint effect +its coefficient in interaction with OECD)*(40.222)(mean percentage of gross tertiary enrolment in OECD)]=-0.064. One standard deviation decrease in corruption is its coefficient in the joint effect (0.064)* (1.161) (St. dev of corruption in OECD)= 0.075 unit or 3%= (0.06*100)/(2.280)(St. dev of political instability in OECD).

[232] The coefficient of corruption (0.527)- the coefficient of joint effect (-0.018)*(16.737) (mean percentage of gross tertiary enrolment in non-OECD countries) =0.225. One standard deviation increase in corruption is coefficient of interaction term (0.225)*(1.099) (St. dev of corruption in non-OECD countries)= 0.247 unit or 5% (0.225*100)/(4.185)(St. dev of political instability in non-OECD countries).

corruption increases political instability by 0.389 units or 0.745% of one standard deviation of instability [233] in comparison with 1.544 units or 2% in non-OECD countries[234].

Analysis of descriptive statistics at country level in OECD countries shows that improvement in educational attainment has a downward pressure on the level of corruption, which in turn deescalates political instability. For example, comparing Canada and Italy's performance in educational attainment, corruption, and political instability shows that Canada is among the highest performing countries in terms of gross tertiary enrolment worldwide (the average over the sample period is 80%), its corruption score (the average is 0.465) and political instability (the average is 4.8). On the other hand, Italy's performance is 46%, 2.8, and 7 in gross tertiary enrolments, corruption and political instability, respectively. There is variation in the impact of the two variables on political instability across OECD countries based on the level of democracy. The level of democracy might drive the variation across these countries. For example, in Poland where the level of democracy is less than the average in OECD countries (17 vs. 20 in OECD) the country performs the worst in gross tertiary enrolment (43% vs. 49% in OECD), corruption (2.4 vs. 1.444 in OECD) and political instability (7 vs. 5.4 in OECD). The interrelationships between education, corruption and political instability are influenced by several factors in addition to the level of democracy like level of economic development. Youth bulge and control variables retain their sign and significance.

The impact of the joint effect on political instability is examined in democratic countries in Model 18. The independent effect of corruption enhances political instability; however, it exposes a lower risk in democratic than autocratic countries. Similarly, a low level of gross tertiary enrolment enhances political instability, but its effect is lower in democratic countries as the interaction term between gross tertiary enrolment and democracy dummy has a positive sign and is significant coefficient at the 5% level. The joint effect has a positive sign although it is insignificant; however, it has

[233] [The coefficient of gross tertiary enrolment + its coefficient in interaction with OECD]+[(the coefficient of the joint effect +its coefficient in interaction with OECD)*(1.444)(mean score of corruption in OECD)]=-0.017. One standard deviation decrease in gross tertiary enrolment is its coefficient in the joint effect (-0.017)* (22.474) (St. dev of gross tertiary enrolment in OECD)= 0.389 unit or .745%= (0.017*100)/(2.280)(St. dev of political instability in OECD).

[234] The coefficient of gross tertiary enrolment (-0.025)- the coefficient of joint effect (-0.018)*(3.4) (mean score of corruption in non-OECD countries)= -0.0828. One standard deviation decrease in gross tertiary enrolment is coefficient of interaction term (-0.0828)*(18.642) (St. dev of gross tertiary enrolment in non-OECD countries)= 1.544 unit or 2%= (-0.0828*100)/(4.185)(St. dev of political instability in non-OECD countries).

a negative impact in democratic countries as the interaction term between the joint effect and democracy has a negative sign but is not significant. In other words, the impact of gross tertiary enrolment on political instability moderated by corruption is higher in autocratic than democratic countries. The interaction effect of corruption at mean percentage of gross tertiary enrolment 40% on political instability in democratic countries is 0.232. Democratic countries face extra risk of instability by 0.317 units or 8% of one standard deviation of instability when its level of corruption increases by one standard deviation at mean percentage of gross tertiary enrolment[235] in comparison with 0.463 units or 11% of one standard deviation in autocratic countries[236]. The interaction effect of education on political instability at mean score of corruption 2.227 in democratic countries is -0.008. Political instability increases by 0.201 units or 0.273% of one standard deviation of political instability for each one standard deviation decrease in gross tertiary enrolment[237] in comparison with 0.995 units or 1.4% in autocratic countries[238].

In autocratic countries, the interaction effect of corruption dominated the joint effect. In these countries, the theory of distributive corruption states that a low level of democracy leads to full control by interest groups over government policies. These groups direct government policies and resources to sectors offering rent-seeking opportunities at the expense of developmental sectors that contribute to government survival (Amundsen, 1999). Corruption links the level of gross tertiary enrolment and political instability through economic growth channels. Corruption has adverse impacts on economic growth, which in turn reduces employment opportunities. This is because public funds are biased towards sectors that enhance rent-seeking opportunities at the

[235][The coefficient of corruption + its coefficient in interaction with democratic dummy]+[(the coefficient of the joint effect +its coefficient in interaction with democratic dummy)*(40)(mean percentage of gross tertiary enrolment in democratic countries)]=0.232. One standard deviation increase in corruption is its coefficient in the joint effect (0.232)*(1.368) (St. dev of corruption in democratic countries)= 0.317 unit or 8%= (0.232*100)/(2.948)(St. dev of political instability in democratic countries).

[236] The coefficient of corruption (0.386)- the coefficient of joint effect (0.005)*(15.876) (mean percentage of gross tertiary enrolment in autocratic countries) =0.465. One standard deviation increase in corruption is coefficient of interaction term (0.465)*(0.994) (St. dev of corruption in autocratic countries)= 0.463 unit or 11% (0.465*100)/(4.349)(St. dev of political instability in autocratic countries).

[237] [The coefficient of gross tertiary enrolment + its coefficient in interaction with democratic dummy]+[(the coefficient of the joint effect +its coefficient in interaction with democratic dummy)*(2.227)(mean score of corruption in democratic countries)]-0.008. One standard deviation decrease in gross tertiary enrolment is its coefficient in the joint effect (-0.008)*(23.825) (St. dev of gross tertiary enrolment in democratic countries)= 0.201 unit or 0.273%= (-0.008*100)/(2.948)(St. dev of political instability in democratic countries).

[238]The coefficient of gross tertiary enrolment (-0.079)- the coefficient of joint effect (0.005)*(3.62) (mean score of corruption in autocratic countries)= -0.061. One standard deviation decrease in gross tertiary enrolment is coefficient of interaction term (-0.061)*(16.313) (St. dev of gross tertiary enrolment in autocratic countries)= 0.995 unit or 1.4%= (-0.061*100)/(4.349)(St. dev of political instability in autocratic countries).

expense of sectors that feed economic growth (Tanzi and Davoodi, 1998). It decreases economic growth via increases in uncertainty of investment environments as found empirically by Knack and Keefer (1995) and Mauro (1997). It further leads to sluggish economic growth through its adverse impact on trade policy and institution quality as found empirically by Leite and Weidmann (1999). Increasing gross tertiary enrolment amidst high levels of corruption reduces an individual's opportunity cost to commit violence[239].

In democratic countries, the joint effect is dominated by the impact of the independent effect of gross tertiary enrolment, suggesting that a low level of enrolment lowers the adverse impact of corruption on political environment. This is because corruption in democratic countries is more likely to take the form of use of public economic policies by the incumbent to eliminate political rivals, as indicated by Manzetti and Wilson (2007). This form of corruption requires knowelge that enables an individual to evaluate relative feasibility and potential impacts on different aspects of society. The negative sign of the joint effect enhances the adverse impact of low levels of gross tertiary enrolment on political instability in democratic countries, although the impact is negligent. Low level of educational attainment decreases public support to a government through several channels. It prevents the ready provision of qualified human resources required by the level of economic development as stated by Wagner law (Martinez-Vazquez & Yao, 2009). Shortage in qualified human resources reduces public support to a government because it reflects needs and requirements of different age groups among the population. Its low level deprives a society from the benefits of stimulating economic growth. Poor economic growth also deprives a government from increasing its tax revenue (Taydas and Peksen, 2012), which reduces its ability to enhance public welfare. Low educational attainment and poor economic growth prevents a country from reducing the level of poverty in society (Thyne, 2006). This increases pressure on governments to respond to high levels of income inequality and poverty by taking measures such as creating public employment. A government is then forced to use implicit and inefficient distribution measures like public employment over other explicit and efficient distribution channels to target specific segments of a society (Robinson and Verdier, 2002) in order to avoid political opposition associated with the latter distribution channels as indicated by Alberto Alesina, Baqir, and Easterly (2000). The negative consequences of a low level of educational attainment prevent a

[239] See for example Barro (1992), Levine and Renelt (1992), Li, Xu,andZou (2000), Gupta, Davoodi and Tiongson (2000), Gupta, De Mello and Sharan (2001).

government from creating a common interest between the public and government that enhances stability under the concept of a consensually strong state. This concept argues that a stabilization of the political environment requires creating common benefits between a state and society. Common benefits make it more likely for the public to tolerate a government's strength measured by high taxes as long as a substantial percentage of it is used to create sufficient public goods and services (Acemoglu, 2005). Youth bulge and control variables retain their sign and significance.

The impact of the joint effect on political instability in the MENA region is examined in Model 19. The independent effect of corruption enhances political instability; however, it exposes lower risk in the MENA region as the interaction term between the joint effect and MENA dummy has a negative sign and is significant at the 1% level. The independent effect of low gross tertiary enrolment exposes higher risk on political environment in the MENA rather than non-MENA region as the interaction term between MENA and gross tertiary enrolment has a negative sign and is significant at the 5% level. The joint effect has a negative sign although it is not significant, yet it turns into a positive sign and is significant in the MENA region as the interaction term between the joint effect and MENA has a positive sign and is significant at the 5% level. In other words, the adverse impact of a high level of gross tertiary enrolment on political environment moderated by corruption is higher in the MENA region. The interaction effect of corruption at mean percentage of gross tertiary enrolment 15.579% on instability in the MENA region is -0.707 (the independent effect of corruption in MENA is -3.76). Each one standard deviation decrease in corruption at mean percentage of gross tertiary enrolment enhances instability by 0.553 units or 16% of one standard deviation of instability[240]. In non-MENA regions each one standard deviation increase in corruption at mean percentage of gross tertiary enrolment 22.478% enhances instability by 0.279 units or 5% of one standard deviation of instability[241]. Similarly, a high level of corruption enhances the adverse impact of an increasing level of gross tertiary education on political instability in MENA. The interaction effect of education at mean score of corruption 3.509 on instability in the MENA region is 0.515.

[240][The coefficient of corruption + its coefficient in interaction with MENA dummy]+[(the coefficient of the joint effect +its coefficient in interaction with MENA dummy)*(15.589)(mean percentage of gross tertiary enrolment in MENA countries)]=-0.707. One standard deviation decrease in corruption is its coefficient in the joint effect (0.707)*(0.782) (St. dev of corruption in MENA countries)= 0.553 unit or 16%= (0.707*100)/(4.366)(St. dev of political instability in MENA countries).

[241]The coefficient of corruption (0.401)- the coefficient of joint effect (-0.009)*(22.478) (mean percentage of gross tertiary enrolment in non-MENA countries) =0.198. One standard deviation increase in corruption is coefficient of interaction term (0.198)*(1.405) (St. dev of corruption in non-MENA countries)= 0.279 unit or 5% (0.198*100)/(3.977)(St. dev of political instability in non-MENA countries).

Instability is enhanced by 6.163 units or 12% of one standard deviation of instability by each one standard deviation increase in gross tertiary enrolment at mean score of corruption[242] whereas reduction in gross tertiary enrolment by one standard deviation at mean score of corruption enhances instability in non-MENA region by 0.958 units or 1% of one standard deviation of instability[243].

The interaction effect enhances the impact of education on political instability in the MENA region. In the MENA region a high level of corruption has an adverse impact on the economic environment, which in turn affects employment opportunities. As a result, the growth rate in educational attainment in the region exceeds employment opportunities (Chaaban, 2013). Furthermore, the weak growth rate in labor-intensive sectors like entrepreneurship fails to generate alternative employment opportunities (O'Sullivan et al., 2011). Politically, the low level of democracy in the region does not offer political channels to satisfy aspirations raised by educational attainment as argued by Huntington (1968) nor to fight corruption politically. Education in the region lowers the impact of the independent effect of corruption on political environment. This suggests that the Huntington (1968) argument (that corruption is an alternative of reform) varies according to the level of economic development. Corruption has stabilization effect at low level of educational attaintment; however, as its level improves it turns into destablization. Generally, youth bulge and control variables retain their sign and significance.

Model 20 investigates the impact of the joint effect on political instability in oil countries. The independent effect of corruption enhances political instability; however, oil countries are at lower risk from corruption as the interaction between oil dummy and corruption has a negative sign and is significant at the 1% level. The independent effect of gross tertiary enrolment has a negative sign and is significant at the 1% level; however, it exposes lower risk in oil countries as the interaction term between gross tertiary enrolment and oil dummy has a positive sign although it is not significant. In other words, decreasing gross tertiary enrolment enhances political instability; however,

[242][The coefficient of gross tertiary enrolment + its coefficient in interaction with MENA dummy]+[(the coefficient of the joint effect +its coefficient in interaction with MENA dummy)*(3.509)(mean score of corruption in MENA countries)]=0.515. One standard deviation increase in gross tertiary enrolment is its coefficient in the joint effect (0.515)*(11.962) (St. dev of gross tertiary enrolment in MENA countries)= 6.163 unit or 12%= (0.515*100)/(4.366)(St. dev of political instability in MENA countries).

[243] It is calculated as gross tertiary enrolment coefficient (-0.016)- the coefficient of joint effect (-0.009)*(2.948) mean score of corruption in non-MENA countries= -0.043. One standard deviation decrease in gross tertiary enrolment is coefficient of interaction term (-0.043)*(22.528) (St. dev of gross tertiary enrolment in non-MENA countries)= 0.958 unit or 1%= (-0.043*100)/(4.349)(St. dev of political instability in non-MENA countries).

the risk is lower in oil than non-oil countries. The joint effect has a negative sign and significant coefficient at the 1% level; however, it has a positive impact in oil countries as the interaction term between oil and the joint effect has a positive sign and is significant at the 10% level. Put differently, the impact of a high level of gross tertiary enrolment on political instability moderated by corruption is higher in oil than non-oil countries. The interaction effect of corruption on political instability in oil countries at mean percentage of gross tertiary enrolment 17.98% is 0.865. Each one standard deviation increase in corruption at mean percentage of gross tertiary enrolment enhances political instability in oil countries by 0.919 units or 21% of one standard deviation of political instability[244] in comparison with 0.433 units or 8% of one standard deviation of political instability in non-oil countries[245]. The interaction effect of gross tertiary enrolment on political instability in oil countries at mean score of corruption 3.627 is 0.426. Each one standard deviation increase in gross tertiary enrolment at mean score of corruption feeds political instability by 7.468 units or 10.5% of one standard deviation of political instability[246] while in non-oil countries each one standard deviation decrease in educational attainment at mean score of corruption increases political instability by 1.957 units or 2% of one standard deviation of instability[247].

The positive joint effect enhances the impact of education and corruption on political instability in oil countries. Increasing the level of educational attainment in oil countries creates pressure on the political system and labor markets, which in turn enhances instability. It increases pressure on already deteriorated labor markets because of the effect of the Dutch Disease model that leads to oil sector domination of economic activities and a high level of government involvement in the economic environment.

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[244][The coefficient of corruption + its coefficient in interaction with oil dummy]+[(the coefficient of the joint effect +its coefficient in interaction with oil dummy)*(17.98)(mean percentage of gross tertiary enrolment in oil countries)]=0.865. One standard deviation increase in corruption is its coefficient in the joint effect (0.865)*(1.062) (St. dev of corruption in oil countries)= 0.919 unit or 21%= (0.856*100)/(4.072)(St. dev of political instability in oil countries).

[245]The coefficient of corruption (0.676)- the coefficient of joint effect (-0.015)*(23.72) (mean percentage of gross tertiary enrolment in non-oil countries) =0.320. One standard deviation increase in corruption is coefficient of interaction term (0.320)*(1.354) (St. dev of corruption in non-oil countries)= 0.433 unit or 8% (0.320*100)/(3.985)(St. dev of political instability in non-oil countries).

[246][The coefficient of gross tertiary enrolment + its coefficient in interaction with oil dummy]+[(the coefficient of the joint effect +its coefficient in interaction with oil dummy)*(3.627)(mean score of corruption in oil countries)]=0.426. One standard deviation increase in gross tertiary enrolment is its coefficient in the joint effect (0.426)*(17.527) (St. dev of gross tertiary enrolment in oil countries)= 7.468 unit or 10.5%= (0.426*100)/(4.072)(St. dev of political instability in oil countries).

[247] It is calculated gross tertiary enrolment coefficient (-0.041)- the coefficient of joint effect (-0.015)*(2.939) (mean score of corruption in non-oil countries)= -0.085. One standard deviation decrease in gross tertiary enrolment is coefficient of interaction term (-0.085)*(23) (St. dev of gross tertiary enrolment in non-oil countries)= 1.957 unit or 2%= (-0.085*100)/(3.985)(St. dev of political instability in non-oil countries).

The weak role of productive sectors in creating employment opportunities place a government under pressure to absorb educated youth in public employment (Sachs and Warner , 1997) in order to stabilize the political environment (Gelb et al., 1991) otherwise risk of instability increases. It increases pressure on the autocratic political system that lacks appropriate channels to accommodate the civic skills of educated youth. This creates pressure on government to move towards democracy; however, this would constitute significant restriction on governmental ability to use oil rents freely. Such restriction prevents governments from financing patron client networks that contribute to the stability of its political environment as suggested by rentier state theory (Smith, 2004). Furthermore, transparency associated with democracy restricts the ability of the ruling elite to allocate funds for their own consumption. Ross (2012) states that the public in oil countries experience difficulty in figuring out the actual level of oil rents and the amount siphoned out from public coffers by the ruling elites. Hence repression measures might be considered as an alternative to democracy in dealing with educated youth.

In non-oil countries, the joint effect is dominated by the independent negative effect of gross tertiary enrolment that lowers the adverse impact of corruption on political environment. The destabilization effect might filter through a reduction in government revenues, its failure to introduce financial measures to improve public finances and its failure to offer alternative opportunities to rent seeking. A low level of educational attainment has an adverse impact on stimulating economic growth, which reduces the level of government taxes. Thyne (2006) argues that wealth brought by education increases the level of taxes so that a government has financial resources with which to increase an individual's opportunity cost to commit violence by outspending the anti-government movement. It creates obstacles before a government in introducing financial measures to improve public finance. Ritzen et al. (2000) argue that an educated population is more likely to accept policy reform because they understand that the short-term cost will be offset by benefits attained over the long run. A low level of collected taxes restricts a government's ability to satisfy the interests of lobbyist groups, and poor economic growth resulting from low educational attainment fails to reduce the pressure on a government through offering alternative channels for rent seeking. Graeff and Mehlkop (2003) argue that a free economy breeds rent seeking opportunities and corruption because private agents might consider paying bribes to step ahead of their competitors. Control variables retain their sign and significance.

Table 3.5 The Joint Effect of Gross Tertiary Enrolment and Corruption on Political Instability over the Period from 1984-2013

Independent variables	Dependent variable: Political Instability				
	Model 16	Model 17	Model 18	Model 19	Model 20
YB	0.154*** (0.031)	0.129*** (0.032)	0.145*** (0.036)	0.169*** (0.031)	0.108*** (0.033)
Corruption	0.572*** (0.151)	0.527*** (0.192)	0.386 (0.468)	0.401*** (0.153)	0.676*** (0.159)
GTE	-0.027*** (0.009)	-0.025** (0.010)	-0.079** (0.031)	-0.016* (0.010)	-0.041*** (0.011)
Corruption*GTE	-0.011** (0.004)	-0.017*** (0.006)	0.005 (0.029)	-0.009** (0.004)	-0.015*** (0.005)
OECD		-1.614*** (0.389)			
OECD*GTE		0.012 (0.014)			
OECD*Corruption		-0.430** (0.190)			
OECD*Corruption*GTE		0.014* (0.008)			
DD			-1.205** (0.612)		
DD*GTE			0.075** (0.031)		
DD*Corruption			-0.074 (0.506)		
DD*Corruption*GTE			-0.007 (0.029)		
MENA				-1.133 (1.393)	
MENA*Corruption				-4.161*** (1.121)	
MENA*GTE				-0.153** (0.066)	
MENA*Corruption*GTE				0.204** (0.097)	
Oil					-1.371 (0.968)
Oil*Corruption					-2.022*** (0.929)
Oil*GTE					0.020 (0.079)
Oil*Corruption*GTE					0.138* (0.084)
Constant	-0.883 (1.607)	-1.368 (1.627)	-0.044 (1.489)	0.0031 (1.495)	2.026 (1.705)
Adjusted R square	30%	32%	30%	39%	28%
Number of observation	617	617	625	617	590
Estimation method	2SLS	2SLS	2SLS	2SLS	2SLSl
P-value	0	0	0	0	0
Number of instrument	1	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10%, 5% and 1% level, respectively. All models include all control variables included in models in Table 3-2 (results are not reported). For space restriction only the results of variables of interest are reported.

3.9 Sensitivity Analysis

The independent effect of corruption examined in Model 1, the joint effect between corruption and youth bulge tested in Model 6, the joint effect between corruption and unemployment investigated in Model 11 and the joint effect between corruption and educational attainment tested in Model 16 will be estimated using an alternative proxy and estimation technique. They are estimated using an alternative proxy of political instability adopted from Saha and Yap (2013), an alternative proxy of corruption from Transparency International (TI)[248] and fixed effect (period effect) to carry out robustness analysis[249].

The independent effect of corruption tested in Model 1 retains its sign and significance across all models estimated using the alternative proxy of political instability and corruption and when models are estimated using fixed effect.

The joint effect of corruption and youth bulge tested in Model 6 holds its sign in fixed effect and alternative proxy of political instability. The joint effect yields an insignificant negative sign when the model is estimated using an alternative proxy of corruption.

The impact of youth unemployment moderated by corruption on political instability examined in Model 11 holds its sign and significance in the fixed model and alternative proxy of political instability. The joint effect yields an insignificant expected positive sign when the model is estimated using an alternative proxy of corruption.

The impact of corruption on instability moderated by educational attainment set in the fifth hypothesis retains its sign and significance across all models.

3.10 Conclusion and Discussion

This chapter examines the independent effect of corruption on political instability and its moderated impact through youth bulge, youth unemployment and gross tertiary enrolment using an unbalanced panel data that contains 138 countries from 1984 to 2013. Furthermore, it investigates the independent and joint effect of corruption on political instability in OECD countries, democratic countries, oil countries, and the MENA region.

[248] The original scale is re-scaled so that a high score indicates a high level of corruption and vice versa.
[249] Results are located in the appendix.

3.10.1 The Independent Effect of Corruption on Political Instability

The first hypothesis assumes that increasing the level of corruption in a country enhances instability. The empirical results confirm the hypothesis; however, there is variation in its impact on political instability across the examined sub-samples.

This study finds that the independent effect of corruption has an adverse impact on political stability in panel data analysis. The results hold when the models are estimated using alternative estimation techniques and stand up to alternative definitions of political instability and corruption. It can lead to political instability when a government is the weaker party in the state-society relationship as stated by the theory of distributive corruption. In this scenario, interest groups influence financial and non-financial decisions of a government. This has an adverse impact on economic growth and quantity and quality of public goods and services. Alternatively, it might be its nature that turns it into a destructive force on political environment, as stated by strategic complementarity view. The view states it is destructive when each member of the incumbent set its own bribe system that leads to political instability. The empirical results are in line with empirical research that uses alternative proxies of political instability and corruption. It is also in line with empirical research that measures political instability in the form of the onset of civil war and armed conflict among others (Anderson and Tverdova, 2003). Furthermore, the present study is in line with empirical research that investigates the impact on political instability measured by public support to political regimes like Rose et al. (1998). Additionally, it supports empirical research that uses alternative proxies of corruption such as law and order like Marcus et al. (2008) who find a significant negative relationship between law and order and political instability. The empirical results give no support to another stream of theoretical and empirical literature that state it has a stabilization effect on political environment, such as the theory of extraction corruption. Empirically, the present study is in conflict with empirical research that finds an increasing level of corruption reduces political instability like Manzetti and Wilson (2007).

The independent effect of corruption enhances political instability; however, its impact is lower in OECD than non-OECD countries. In democratic countries like OECD countries some form of corruption is required to stabilize the political environment by satisfying different needs of electorates as argued by Manzetti and Wilson (2007) and Leys (1965); however, its impact on different aspects of society is not equivalent to that realized in non-OECD countries. Furthermore, corrupted

transactions in OECD countries lead to political instability through political channels when discovered by the public. The results confirm the finding of Fjelde and Hegre (2014) that democratic regimes with a low level of corruption are more stable than those with a high level of corruption. However, it represents a departure from the findings of Manzetti and Wilson (2007) that corrupt governments in democratic countries continue to stay in office by using its client network to increase political support.

Increasing corruption level enhances political instability in autocratic and democratic countries; however, its impact is lower in democratic countries. The destabilization effect of corruption on political environment goes through different channels in mature and immature democracy. In mature democracies, government needs to balance between private and public interests when it uses corruption to stabilize the political environment. Giving weight to one interest over another enhances political instability. Fjelde and Hegre (2014) find in panel data analysis that democratic regimes with low levels of corruption are more stable than those with high levels of corruption. In immature democracies, failure to reduce level of corruption enhances political instability. Rose et al. (1998) find that a high level of corruption in a democratic country decreases political support to the prevailing political regime and increases support for an alternative autocratic regime. In the same vein, Seligson (2002) finds in panel data analysis comprising some countries in South America that corruption undermines the legitimacy of the democratic system. Regardless of the level of democracy, the use of corruption to stabilize the political environment pays off over the short to medium run; however, it increases political instability over the long run. Clapham (1982) cited by Arriola (2009) indicates political instability increases over the long run as a result of imbalance between the level and growth rate of public resources and the growth in demand made by the growing number of interest groups. Corruption in autocratic countries enhances instability when it has a destructive effect on public living standards and they cannot gain involvement in its activities. The destabilization effect of corruption in autocratic countries does not support empirical research that finds it has stabilization effect (see, for example, Medard 1991, Widner, 1992 cited by Arriola, 2009 and Johnston 1996).

Corruption enhances political instability; yet it constitutes a lower threat on political environment in the MENA than non-MENA regions. The relationship filters through different channels in countries rich and poor in natural resources in the MENA region. In countries rich in natural resources like monarchies in the Arabic peninsula,

governments abolish the possibility of establishing common ground between interest groups and the public to act against a government. This happens by offering oil rents to interest groups through extensive patron-client networks and distribution expenditure directed to pacify the public (De Mesquita and Smith, 2009). Corruption in countries poor in natural resources relieves pressure on government to instigate reform as argued by Huntington (1968). In authoritarian countries it provides a channel of free movements and distribution of public resources across groups in a society where otherwise there would be no access in the absence of corruption (Becquart-Leclercq, 1989). However, political risk still exists, from among other reasons, competition over its proceeds or unequal opportunities available to the public to be involved in government decisions.

Corruption enhances political instability; however, it exposes lower risk in oil than non-oil countries. Oil rents and a low level of democracy in rentier states give government the ability to freely finance patron-client networks without needing to increase taxes on the public to finance the network (Smith, 2004). The empirical results in oil countries are in line with empirical research that finds a positive relationship between the two variables such as Fjelde (2009)[250] and Neudorfer and Theuerkauf (2014)[251]. The results represent a departure from the empirical finding of Fjelde (2009) that the joint effect of corruption and oil production has a negative and significant relationship with the onset of armed conflict. However, it can enhance instability when oil rents are controlled by one segment while others are prevented from gaining access to it. Ross et al. (2011) argue that oil rents enhance instability when it exists in a region with pre-existing ethnic or religious grievances. In non-oil countries the source of political instability will be a combination of the adverse impact of corruption and rent seeking activities on public living standards and an increasing level of taxation on the public, which further deteriorate their living standards. Fjelde (2009) claims that the political risk of corruption is higher in non-oil countries than oil countries. The author supports this claim with several anecdotal cases such as Haiti in 1989, Sierra Leone in 1991, Liberia in 1989 and Uganda in 1994; these countries are poor in non-tax revenue and have high levels of corruption that leads to armed conflict.

[250] The author measures instability in form of civil war
[251] The author measures instability in form of ethnic war

3.10.1.1 Contribution

This study examines the independent effect of corruption on political instability in panel data, OECD countries, oil countries, democratic countries, and the MENA region over the period from 1984-2013. It is distinct from other research in the nexus of corruption and instability in several aspects. It uses a proxy of corruption that measures its political risk and uses a broad proxy of political instability. It examines the impact on political environment unlike past empirical literature that measures its impact on economic growth, government performance and public welfare. It examines impact on political environment in sub-samples that show variation in the level of corruption, the percentage of youth bulge and socioeconomic and political environment. By doing so it examines several arguments about the stabilization and destabilization effect of corruption under different environments. It shows that corruption has a destabilization effect; however, several factors play an important role in lowering its impact, such as source of public revenue and the level of democracy. Furthermore, it might have a stabilization effect over the short run; however, it is causes an accumulated adverse effect that enhances political instability over the long run. It finds that corruption has a positive and significant relationship with political instability in panel data analysis, non-OECD countries and non-oil countries.

3.10.2 The Joint Effect between Corruption and Youth Bulge on Political Instability

The role of youth bulge on political instability moderated by the level of corruption is examined in Model 6. In general, the empirical results confirm the hypothesis yet there is variation in the impact of the joint effect across sub-samples.

The empirical results from panel data analysis support the second hypothesis that the impact of youth bulge on political instability is stronger in corrupted countries. The joint effect enhances instability because corruption intensifies pressure created by youth bulge on the socioeconomic environment. The situation worsens when relatively few interest groups control corruption gains and youth bulge have no access at all. This motivates youth bulge to consider violence as a means to gain access to its economic benefits (Le Billon, 2003).

Corruption enhances the role of youth bulge on political instability and its impact is higher in OECD countries than non-OECD countries. In OECD countries the

failure of government to respond to public concerns over the level of corruption or the requirements of youth bulge enhances political instability.

Youth bulge exposes lower risk on political environment in the presence of corruption in democratic than autocratic countries. Similarly, they expose lower risk on the political environment in oil than non-oil countries. Their role on political instability is enhanced by a high level of corruption in the MENA region. The positive joint effect in MENA and autocratic countries could be the result of unequal distribution of its economic proceeds across segments of the public. This arises when its benefits are fully controlled by relatively few interest groups and youth bulge has no means with which to gain part of these benefits. Similarly, the source of government income determines who bears its cost. Oil rents offer a source for government to stabilize its political environment through patron client networks without taxing the public while it continues to absorb youth in educational institutions and public employment. On the other hand, youth bulge in non-oil countries causes government to bear its cost twice through under provision in some sectors like education and leads to continual increases in taxes on productive sectors to finance its activities, which negates its ability to generate employment opportunities. In democratic countries, a high level of political competition brought by democracy reduces its impact on political instability. The positive sign of the joint effect is in line with the findings of Farzanegan et al. (2014) who find a significant positive relationship between interaction term and the level of political instability[252]. The positive relationship in the MENA region is in line with several arguments that indicate that a high level of corruption in the region enhanced the impact of youth bulge on the so-called the Arab spring in late 2010. This is in line with arguments made by Sommers (2011) that a corrupted country faces a high risk of political instability in the presence of a high percentage of youth bulge because corruption further deteriorates already poor conditions.

3.10.2.1Contribution

This study investigates the impact of youth bulge moderated by corruption on political instability in different sub-samples, over an extended time period, with an alternative proxy of corruption, political instability and youth bulge. This is far more

[252] Farzanegan, Reza and Witthuhn (2014) measure youth bulge as the proportion of the population aged 17-25 years old to population aged 15-64 years old and political instability measured using the World Governance Indicators.

extensive than Farzanegan et al. (2014) who examine the impact of joint effect in panel data analysis that covers the period from 2002 to 2012. Furthermore, this study examines anecdotal observations that link youth bulge and political instability in the MENA region through corruption. It finds that corruption produces its impact on political instability in the region through its interaction with youth bulge, as is the case in OECD countries, democratic and autocratic countries. It shows that corruption enhances the role of youth bulge on political instability under different situations; however, for different reasons. In some countries where their percentage is low they might be driven by a low of level of tolerance for corrupted transactions. In other instances, they are driven by its adverse impact on public living standards. Additionally, it shows that the joint effect between corruption and youth bulge provides more explanations about the impact of corruption on political environment than only its independent effect. The present study finds that the joint effect has a positive and significant relationship with political instability in OECD countries, democratic and autocratic countries and in the MENA region.

3.10.3 The Joint Effect between Corruption and Youth Unemployment on Political Instability

The empirical hypothesis confirms the third hypothesis that corruption enhances the role of unemployed youth on political instability; however, the risk is higher in OECD countries than non-OECD countries, democratic than autocratic countries and MENA region than non-MENA region. Corruption has an adverse impact on different aspects of society, one of which is labor markets. Its effect travels through different channels across these sub-samples such that when unemployed youth believe that a high level of corruption prevents them from finding employment opportunities, they will act against a government. Sommers (2011) point out that instability is enhanced when youth bulge believes that the corrupted government fails to address their economic and political exclusiveness.

Interestingly, the joint effect has a negative sign in oil and non-oil countries and panel data analysis; this suggests that a low level of corruption lowers the impact of unemployed youth on political instability. It could be that a government succeeds in reducing the level of political corruption in a country as a source that exaggerates the role of unemployed youth on political instability. However, its low level enhances the political risk of dissatisfied interest groups with their interests unmet by government.

3.10.3.1Contribution

To best of the author's knowledge there are no empirical studies investigating the impact of the joint effect between corruption and unemployment on political instability under different sub-samples. This study shows that when corruption prevents youth from employment as a path that satisfies financial independency and other objectives, it turns into a destabilization factor regardless of the level of democracy. Furthermore, this study examines the effect of corruption on an important need of youth bulge that determines an individual's opportunity cost to be involved (or not) in incidences of political instability. It finds that the joint effect between corruption and youth unemployment has a positive and significant relationship with political instability in the MENA region and OECD countries; however, the impact is substantially high in the MENA region.

3.10.4 The Joint Effect between Corruption and Gross Tertiary Enrolment on Political Instability

The fourth hypothesis assumes that the more corrupt a country, the stronger the impact of a high level of gross tertiary enrolment on political instability. The empirical results confirm the hypothesis in autocratic countries, MENA region and oil countries. In these countries, the effect filters through the labor market and the level of democracy. The low level of democracy does not offer political channels to educated youth to use their civic skills to fight corruption politically. Furthermore, a low level of democracy enhances the adverse impact of corruption on different aspects of society, among which is economic growth that reduces employment opportunities available for educated youth. Corruption that prevents educated youth from joining labor markets and insufficient political channels with which to fight such injustices might push youth to rely on violence to press for reform.

The joint effect has a negative sign in OECD countries and non-OECD countries, democratic countries, panel data analysis and non-oil countries, suggesting that a low level of corruption and low level of gross tertiary enrolment lower political stability. It might be that in these countries financial pressure restricts governments from providing public goods like education and private services for interest groups so that political instability ensues.

3.10.4.1Contribution

The joint effect between corruption and gross tertiary enrolment on political instability investigated in this study is to best of the author's knowledge a novel contribution to the empirical literature in panel data analysis, OECD countries, democratic countries, oil countries, and the MENA region. It identifies another important channel that links corruption to political instability. It shows the importance of democracy to lower the impact of the interaction effect of the two variables on political instability. Furthermore, it shows that democracy offers educated youth channels with which to fight corruption politically; however, in the absence of such channels they might rely on radical change to do so. It finds that the joint effect between corruption and gross tertiary enrolment has a positive and significant relationship with political instability in the MENA region and oil countries.

3.11 Future Research

The empirical results suggest several directions for future research. The lower effect of the independent effect of corruption and its joint effect with youth bulge, youth unemployment and gross tertiary education on political instability under some sub-samples require further investigation.

The lower impact of the independent effect of corruption on political instability in oil and MENA countries needs further investigation. One possible explanation is that governments in these countries realize that satisfying interest groups has a higher immediate stabilization effect than meeting the requirements of youth bulge. In the absence of dissatisfied interest groups there is no party interest in supporting youth bulge against a government. From the general reading of the author, the Egyptian government has for an extended period of time denied the political right of the Muslim Brotherhood movement. In wake of public demonstrations against the Mubarak regime in late 2010, the movement organized and supported desperate youth bulge against the regime. The movement succeeded to win the first presidential election after Mubarak. Other governments in the region realized the importance of some interest groups such as religious figures to create positive attitudes among the public towards a government. Religious tradition in the region constitutes an important element of political economy. In the wake of the so-called Arab Spring in late 2010, religious figures in the public issued a statement that demonstration and strike against the government is prohibited from a religious point of view. Future research might investigate the relationship

between corruption and political instability using proxies that measure the relative satisfaction of interest groups.

The lower impact of the joint effect between corruption and youth bulge in oil than non-oil countries despite the explanation offered in this study needs further investigation. Future work might investigate the impact of the joint effect on instability in countries based on oil production per capita or oil reserve per capita. It might be that its impact on instability is different in countries with higher values in these two proxies than countries with low values. Countries rich in these proxies can satisfy public and private interest while those displaying poor results in these proxies might consider which party's interest is more important to political instability. Alternatively, it might investigate the impact of the joint effect between corruption and repression on political environment.

In the relationship between corruption and labor markets, future research could investigate its impact on instability under different scenarios. It could examine the impact of the joint effect between a high level of corruption and unemployment and the joint effect between a low level of corruption and high unemployment. It may investigate its impact using alternative proxies of unemployment such as unemployment to total labor force.

Regarding the impact of education on political instability moderated by the level of corruption, future research could investigate the impact of each educational level on political instability moderated by the level of corruption. Alternatively, it can investigate the joint effect between education quality such as country performance in math and science worldwide. This is because some authors such as Eicher, García-Peñalosa, and van Ypersele (2009) argue that education enhances the level of corruption because the educational system in some instances equip youth with skills to involve in rent seeking instead of productive activities.

Future research can further investigate the independent impacts of corruption and its joint effect on instability in countries where corruption is the norm versus countries where it is uncommon. Alternatively, it is possible to investigate the variation of the level of political instability based on the type of corruption, such as petty corruption versus grand corruption.

3.12 Policy Implications

Political and bureaucratic corruption is driven by different factors. A high level of perceived bureaucratic corruption in some countries might be a response to poor living standards that forces the public to become involved in its activities. Political corruption aims to establish common interest between the ruling elite and interest groups. Strategies to fight both types of corruption require strong political will. This is the outcome of political leadership that understands that the long-term benefits of a low level of corruption greatly outweigh the short-term benefits associated with a high level of corruption. Furthermore, it requires a unique approach to each determinant.

Improving public living standards is the first step in reducing bureaucratic corruption. It is required to set a plan for economic reform with the aim to diversify economic activities. Diversification contributes to reducing the level of corruption through several channels. It expands economic opportunities available to the public so that they will seek education that enhances their gains from the attractive economic environment. Diversification reduces the level of corruption by offering an opportunity to private agents to move between different sectors when they are forced to pay bribes in a specific sector. Taxes generated from economic growth provide a government with financial resources to improve other sectors such as education and housing. From general reading of the author of this thesis, the Chinese government has set plans worth $150 billion to establish new villages for poor Chinese until 2020. Benefits brought by economic reform establish common interests between government, the public and interest groups.

Policy makers need to set a plan for political reform to likewise reduce political corruption. This reform should take place in parallel with economic reform. This is because some empirical research finds that the level of corruption increases when political reform falls behind economic reform. Political reform that aims to establish consolidated democracy, not procedural democracy, is required to fight corruption. Procedural democracy that gives some room for free expression in the absence of checks and balances and other measures required to discipline politicians can increase the risk of political instability. This type of democracy informs the public about corruption scandals in the absence of punishment and only increases public dissatisfaction with their living standards, making them likely to stand against a government when they successfully organize collective action.

Policy makers need to increase both the predictability and clarity of bureaucratic procedures. They need to set clear and precise definitions of corrupted transactions. The importance of such definitions emerges from the fact that the public within a single country can perceive corruption differently. For example, some members of the public consider a transaction to be corrupted when money changes hand (but otherwise not); however, corrupted transactions come in many different shapes and sizes. Policy makers need to consider automation of government activities, especially for some factors that reduce the level of corruption over the medium to long term. Automation will reduce human interference that has been found to be associated with a high level of corruption. Furthermore, it eliminates the adverse effect of culture on anti-corruption strategies in countries where corruption is deeply rooted in a society.

Policy makers need to enhance the role of an individual and a community in fighting corruption. An individual role can increase through educational system with aim to create an edge between public and private right associated with public post. Increasing transparency in allocation of public expenditure enhance the role of community in fighting corruption through providing the required information to evaluate the efficiency of public expenditure and such expenditure is allocated to the best interest of community.

Chapter 4

Does a Large Government Size Play a Crucial Role in Subsiding Political Instability?

4.1 Introduction

Government plays an important role in preventing incidences of political instability associated with a highly youthful population distribution (youth bulge). It achieves this by taking a proactive approach through creating socioeconomic and political conditions that help to turn youth bulge from a demographic curse to demographic dividends. Alternatively, when a government fails to create such an environment, it is forced to take a reactive approach in response to mismatches between rapid changes in the percentage of youth bulge and the prevailing socioeconomic and political environment. Among other reactive approaches is enlargement of its size and expansion of its role in order to compensate for poor performance by creating public employment in response to youth unemployment, high levels of educational attainment combined with a lack of graduate entry-level positions, poor economic growth, and rapid urban growth rates. Failure to address these factors has the potential to enhance the role of youth bulge as a causal factor of political instability.

Here it is useful to consider some causal historical observations. The rise of Nazism in Germany in the 1930s is partly attributed to young people who experienced difficulty in finding employment (Urdal, 2004). Shambayati (1994) argues that Iran experienced rapid urban growth in the years preceding the Islamic revolution in 1979, which caused accumulated pressure on educational and employment opportunities. Similarly, the Algerian armed conflict in 1992[253] is attributed to a youth bulge where the young experienced difficulty in finding employment, educational and housing opportunities (Trends, 2001). A government might consider expanding its role by increasing its expenditure on education as an alternative policy to deal with unemployment and rapid changes in urban growth rate. Expenditure on education can be used to rehabilitate unemployed youth to seek re-employment or as alternative means of employment in order to waive their risk on political environment temporarily. Some governments in the MENA region like the monarchies in the Arabian Peninsula protected themselves from the adverse effects of the so-called the Arab Spring in late

[253] The armed conflict between the Algerian government and various Islamic groups began in 1991 and ended in 2002.

2010 by creating massive public employment and expanding educational opportunities for youth.

Given the important role of government to lower the impact of socioeconomic environment and youth bulge on political instability, the current empirical literature moves from opportunity and grievance perspectives to explain its determinants in lowering such risk. Taydas and Peksen (2012) point out that there is little agreement on the main causes of political instability; however, there is some consistency in the literature on the role of government in stabilizing the political environment. Commonly, the empirical literature tends to measure its role in the form of coercive strength (Mason and Fett, 1996). Much of the literature measures the impact of a state's military strength on preventing political instability (see, for example, Mason and Fett, 1996 and Balch, Lindsay and Enterline, 2000). More recently, other aspects of its role (including administrative and bureaucratic roles) are well explored (see, for instance, Morrison 2009, Taydas et al. 2010 and Bricker and Foley, 2013). However, surprisingly few empirical studies measure government role in the form of financial expenditure. Taydas and Peksen (2012) invesigate the independent effect of disaggregate and aggregate expenditure on education, health and social security as well as government consumption at the onset of armed conflict, using a data set which covers a period from 1975 to 2005 in 156 countries. Higashijima, Singh, and Bodea (2014) examine the independent effect of total public expenditure, military expenditure and social expenditure (education, health and social security) on the onset of armed conflict in oil countries based on their oil and gas value per capita using a data set of 148 countries over a period from 1960 to 2009.

This study aims to expand the work begun by Taydas and Peksen (2012) and Higashijima et al. (2014) concerning the role of government on the form of financial expenditure on political instability. It examines the independent effect of government size and its role on political instability as well as the joint effect of government size and the joint effect of government role on political instability. It differs from Taydas and Peksen (2012) and Higashijima et al. (2014) in several aspects. First, it uses a broader measure of political instability that considers minor and major scales of political instability unlike the previously mentioned studies that measure armed conflict, which may not capture the impact of government size and role on political instability. This is because in the condition of armed conflict, it is expected that military expenditure will increase with adverse impacts on government size and role.

Second, the study examines the impact of the joint effect of government role and the joint effect of government size on political instability. The joint effect rather than the independent effect can establish the causal relationship between the government size and role on the one hand and political instability on the other hand. It could be that a government size and role are both large yet they fail to meet public needs and requirements. For example, Singapore, Khazhstan and Switzerland have a smaller government size than the Congo Democratic Republic, Liberia and Lebanon [254] yet the former countries are more stable[255]. It might be that government size and role ceteris paribus in the Congo Democratic Republic, Liberia and Lebanon fail to address poor peformance in some determinants of political instability. In other words, government size and role, especially in developing countries, can be large because it is used to create private goods and services rather than addressing the prevailing poor socioeconomic environment that can lead to political instablity.

Third, this study examines the impact of government size and role on political instability in countries based on the percentage of youth bulge, the level of democracy, oil countries and MENA region. These sub-samples are created to capture the variation in the impact of government size because of the failure to meet requirements of age structures within the population or because of poor quality of government size and role. More importantly, the study aims to capture whether in some instances enlargement of government size and role to address poor socioeconomic environment leads to political instability. This is because they create financial pressure on a government that requires introduction of suitable financial measures. Some of these measures may deteriroate the living standards of public employees while the socioeconomic environment continues to consitute political risk.

The first sub-sample the study will create is based on the percentage of youth bulge, as it is expected that the distribution of the age structure of the population may influence the type of government expenditure. In countries where there is a high percentage of young people it is expected that a government will allocate more funds for job creation and education, while in countries where the percentage of senior citizens is high more funds will be allocated to areas that serve this age group.

[254] The data set used in the present study shows that the average government size in Singapore is 10% to GDP, Khazhstan 12% to GDP and Switzerland 11% to GDP, while its size in the Congo Democratic Republic is 16% to GDP , Liberia 15.4% to GDP and Lebanon 15.4%.
[255] Average score of political instability in Singapore is 3.68, Khazhstan 3.04 and Switzerland 2.5, while its size in the Congo Democratic Republic is 12.7, Liberia 12 and Lebanon 11.5.

The second sub-example this study will use is based on the political regime type (democratic and autocratic countries) to capture its influence on the effectiveness of the independent effect of government size and role as well as its interaction with socioeconomic factors on political instability. There is no significant difference between government size and role between democratic and autocratic countries[256]; however, there is a difference in the level of political instability[257]. In other words, government size and role can create different outcomes between democratic and autocratic countries. Size and role may be large in both sub-samples yet displays a higher stabilization effect in democratic countries than autocratic countries. This is because the public in democratic countries has political channels with which to question a government when it fails to meet their needs and requirements. On the other hand, it might be large in autocratic countries yet it leads to destabilization. This might suggest that the government size and role is sufficient; however, there might be other factors that prevent the stabilization effect.

The third sub-example that the study will use is oil and non-oil countries in order to examine the impact of government size and role on political instability based on the source of government revenue. It might reveal that there is variation in the stabilization effect of government size and role between oil and non-oil countries. This is because in non-oil countries stabilization of political environment might require non-financial measures like tax cuts rather than enlarging a government's size or role; while in oil countries in the absence of tax hikes, government size and role might have a stabilization effect. In the MENA region media reports and commentators claim that governments are highly involved in their economic environment and serve as main providers of goods and services. This sub-sample aims to examine the effect of government size and role to lower the impact of socioeconomic environment on political instability.

Based on the previous propositions, the hypotheses of this study are as follows. Firstly, enlargement of government size and role enhances political stability. The second hypothesis is that a large government size lowers the impact of unemployment on political instability. The third hypothesis states that the impact of corruption on political instability is stronger in countries with a large government size. The fourth

[256] The data set used in the present study shows that the average government size in democratic countries is 17% to GDP, while in autocratic countries it is 15% to GDP.
[257] The average score of political instability in autocratic countries is 8, while in democratic countries it is 6.

hypothesis is that enlargement of government size lowers the impact of a high level of educational attainment on political instability. The fifth hypothesis argues that enlargement of government size lowers the adverse impact of trade openness on political environment. The sixth hypothesis states that enlargement of government size lowers the impact of rapid urban growth rate on political instability. The seventh and eight hypotheses assume that enlargement of government role lowers the impact of unemployment and urban growth rate on political instability. These hypotheses are examined using panel data analysis, countries where the percentage of youth bulge is more than 30% and less than 30%, democratic countries, oil countries and the MENA region.

This chapter is organized as follows. Section 4.2 presents a review of the literature; Section 4.3 outlines the determinants of government size and political stability, Section 4.4 explores the effects of expenditure on education and political stability; Section 4.5 gives brief overview about the consequences of oversized government; Section 4.6 examines government size and its role on political instability; Section 4.7 presents the empirical model, data and methodology; Section 4.8 outlines the estimation strategy; Section 4.9 presents the empirical results concerning the independent effect of government size on political instability; Section 4.10 presents the empirical results concerning the impact of the joint effect of government size and other factors on the level of political instability; Section 4.11 presents the empirical results concerning the joint effect of government role and unemployment rate on political instability; Section 4.12 presents the empirical results concerning the joint effect of government role and urban growth rate on political instability; Section 4.13 presents the sensitivity analysis; Section 4.14 discusses and concludes; Section 4.15 suggests future research and Section 4.16 explores policy implications.

4.2 Literature Review

This section will begin by giving a brief overview of a common proxy for government role used in the literature, which is its military role in protecting its political environment. This study argues that reliance on military forces does not prevent, eliminate or terminate political instability because it does not settle its causes. In the following there is a brief overview of the factors that drive government size in democratic countries and oil countries. The study provides the alternative explanation that its size grows in response to international integration or level of economic development. Under all conditions its size and role are used to stabilize the political

environment through compensating for poor performance in other factors or as a response to rapid changes in some factors. The study presents the adverse impacts of enlarging government size on other aspects of society.

4.2.1 Government Role and Political Instability

Current literature concerning civil unrest shifts its focus from investigating the determinants of political instability as suggested by opportunity and grievance perspectives to the role of government in preventing, eliminating and terminating instability incidences under the so-called state capacity concept. The role of government under state capacity is conceptualized and measured by its military strength, bureaucratic/administrative quality, and political institutional coherence and quality. Outstanding performance in these dimensions has a stabilization effect on the political environment in a country. Empirical research that investigates the role of government on the level of political instability mainly measures it in terms of military strength and there is limited empirical research that investigates other dimensions of government role. The relationship between military strength and stability is confirmed empirically (see, for example, Mason and Fett, 1996, and Balch, Lindsay and Enterline, 2000). Although the empirical research confirms the association between these two variables[258], one can argue that the military role of a government cannot prevent political instability from the onset of the first instance, nor does it reduce its time frame or increase the potential to terminate it. This is because it does not settle factors contributing to its onset such as economic or political factors, or related to the cost associated with reliance on military forces, which will be discussed later.

The military role of government increases military expenditure at the expense of expenditure on some sectors that contribute to stability, like education. Henderson and Singer (2000) indicate that it has a crowded out effect on welfare expenditure such as education, health services, and other social services that target overall society. This prevents education from producing its stabilization effect on political environment via boosting long-term economic growth and developing civic skills that make an individual more reliant on discussion instead of violence to settle disputes. Barakat and Urdal (2009) find empirically that a country with a high level of educational attainment faces low risk of political instability.

[258] It is measured political instability as dependent variable mainly in the form of war.

The military role of government enhances the level of corruption and rent seeking activities associated with military expenditure. Henderson and Singer (2000) indicate that a high military role offers abundant opportunities for corruption and rent seeking activities. Gupta et al. (2001) find a significant positive relationship between corruption and military expenditure measured by military expenditure as a ratio of GDP. Corruption and rent seeking have adverse impacts on public policy. Its high level forces a government to adopt sub-optimal policies because it comes under the influence of different interest groups (Persson and Svensson, 1990). The military option to settle political dispute creates a state of uncertainty in the political environment that is considered a favourable environment for corruption and rent seeking. Pellegrini (2011) find that a high level of political instability is associated with a high level of corruption because politicans believe they will stay in office for short time and so aim to maximise their personal benefits.

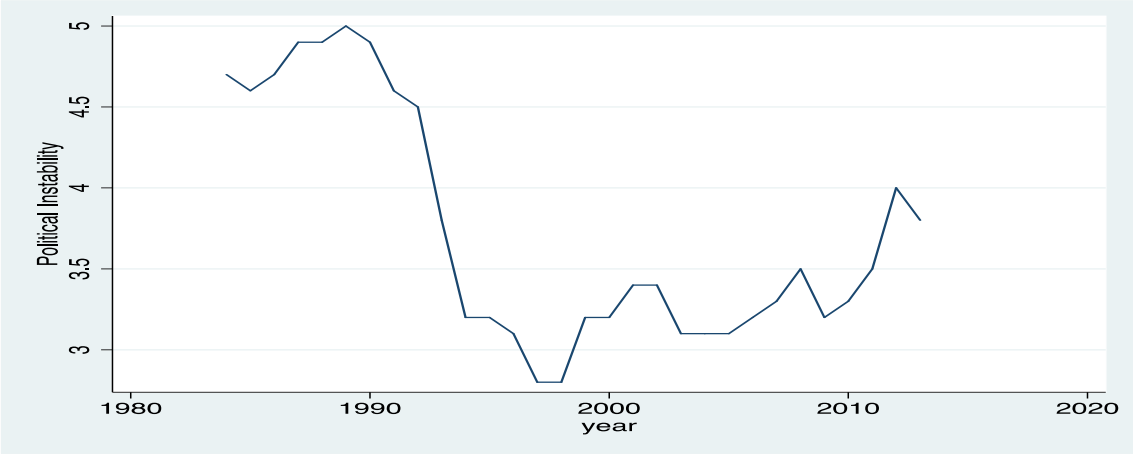
A high level of corruption and rents seeking reduces the level of public revenue and leads to poor economic growth. This has an adverse impact on government ability to enforce stability through military forces and it further decreases the level of employment in a country. Svensson (1998) find that poor institutional quality forces firms to operate in an informal economy, which in turn reduces the level of tax collection and prevents a government from carrying out its duties efficiently. It has an adverse effect on economic growth through its effect on efficient allocation of resources for a society (Le Billon, 2003). A high level of corruption in a country that has a high level of military expenditure leads to poor economic growth. Pieroni and d'Agostino (2009) find in panel data analysis that the joint effect between corruption and military expenditure has an adverse effect on economic growth.

The negative consequences of a high level of corruption and military expenditure enhance the risk of political instability. This is because they increase the level of grievance and decreases an individual's opportunity cost though decreasing the level of employment resultant from poor economic growth (Looney and McNab,2008). Dunne and Tian (2015) find empirically that corruption has an adverse effect on economic growth; the results hold across low, middle and high-income countries. Farzanegan et al. (2014) indicate that a country with a high percentage of youth bulge experiences pressure on labor markets, economic and political environments, and that corruption might further deteriorate already poor conditions. Collier (2000) specifies that according to the opportunity perspective it is expected that an individual will join a

rebellion movement when there is widespread poverty and unemployment across a society.

The military role of a government might have a stabilization effect in the short to medium term, however it enhances the chance of political instability incidences in the future and increases uncertainty in the political environment. This is because the military option does not settle factors that contributed to the onset of instability incidences in the first place. Smith (2004) indicates that a country with a history of political instability is more likely to experience political instability in the future. Collier (2007) cited by Polachek and Sevastianova (2012) indicate that past conflict increases the probability of recurring future conflict because a country engages in a vicious circle of political instablity and poor economic growth. The military option increases uncertainty in the political environment, which discourages investment (see, for example, Barro, 1992 and Alberto Alesina et al. (1996). Polachek and Sevastianova (2012) find in panel data analysis that conflicts have adverse effects on all aspects of the economy in a country, and that the impact varies across countries based on their wealth and polity. Figure 4.1 shows the level of political instability in selected countries where the score is above 3.5 from 1984 to 2013[259]. These countries succeed in improving their stability at the beginning of the period before reaching its lowest point in the late 1990s; however in recent years the level of instability is recovering.

Figure 4.1 The Level of Political Instability in Selected Countries from 1984 to 2013



The military role of government to stabilize the political environment can lead to a vicious circle of political instability where instability breeds more instability. Falling

[259] Colombia, Sudan, Nigeria, Sri Lanka, Pakistan, Indonesia, Israel, India, Uganda and Ethiopia.

in such a condition is attributed to a variation in interests across groups involved in the conflict, fighting strategies and through its adverse effect on economic growth. The difference in interests makes some involved groups push towards political settlement while others may prefer to continue with violence (Rudloff and Findley, 2016). For example, the failure to reach political settlement in the ongoing condition of political instability in Syria (since 2011) is partially attributed to different interests across involved opposition groups (that are estimated to be around one thousand) (BBC, 2013). This creates a state of ongoing instability because of the fighting strategy used by rebellion groups. Hultquist (2013) finds that a government with strong military capability experiences difficulty in crushing rebellion even when the rebellion may be relatively small because of particular fighting strategies used by the rebellion like guerrilla warfare.

4.3 Determinants of Government Size and Political Stability

This section presents factors that drive government size in oil countries and democratic countries. Alternatively, its size might be driven by needs and requirement such as high level of integration with international markets or the level of economic development.

4.3.1 Government Size, Rents from Natural Resources and Political Stability

The Dutch disease model, rent seeking model and rentier state theory explain factors that drive a government size in oil countries. Although each model attributes the size of government to different factors, there is a general agreement that the final objective is stabilization of the political environment. Higashijima et al. (2014) indicate that a government's size in oil countries (both democratic and autocratic) succeeds in stabilizing the political environment.

Under the Dutch disease model, governments in oil countries enlarge their size by creating public employment to address imperfection in the labor market. These imperfections are created because the natural resources sector drives away intensive labor and technology resources from other economic sectors like manufacturing. This leads to a negative impact on employment distribution across different economic sectors, so that a government creates public employment to absorb labor forces (Sachs and Warner, 1997). Said (1996) documents cases of rentier states in the Arabic Peninsula where governments tend to offer highly compensated public sector employment for their citizens. The author indicates that in 1992 a government sector in

oil-rich country Kuwait employed 91% of the Kuwaiti labor force; however, this trend declined in 1980 with a subsequent slump in the economy resulted from low oil prices. As a result, oil countries enjoy a high level of political stability because they creates a middle-income group that is financially dependent on the government to make their living (Sandbakken, 2006).

Rent seeking theory assumes that public employment in oil rich countries is one form of rent seeking in the labor market that aims to stabilize the political environment. A government responds to pressure created by interest groups organized around ethnic, religious and geographic lines by creating massive public employment (Lane and Tornell, 1996). Gavin (1993) illustrates the case of Nigeria where public employment from 1973 to 1983 increased while employment in all sectors decreased. The author indicates that this is a strategy used by the government to stay in office and eliminate threats from its rivals. A similar case is observed in copper-dependent Zambia, where president Kenneth Kaunda in 1972 banned political parties and offered employment opportunities to members of the United National Independence Party in order to secure power and access to copper income. Such responses to pressuring groups leads to a high level of corruption and creates strong resistance from different interest groups to a reform agenda that gives equal opportunities to the entire population such that the overall society prefers to remain involved in rent-seeking activities rather than alliance building and political unrest (Sandbakken, 2006).

Rentier state theory argues that oil countries stabilize the political environment through several forms of distribution expenditure, which among others includes creating public employment (Sandbakken, 2006). Public employment enhances stability because it prevents instability caused by greediness as indicated by rent seeking theory (Smith, 2004). Oil resources are non-tax revenue, and as such it is generally difficult for citizens and rebels to figure out how much oil resources the government actually has and how much the ruling elites can siphon out from the public coffers (Ross, 2012). In this context, rebels may overestimate the value of the state. Signaling via government size could lower rebels' perception about the value of the state (as a prize going to a small number of elites rather than a large group) and their expectation that they will be able to grab a high state prize pending successful insurgency. This should result in fewer incentives to take up arms, and more readiness to cooperate with the government (Higashijima et al., 2014). Empirically, Basedau and Lay (2009) find that rentier states that are wealthier in term of oil production per capita than their counterparts increase

the level of political stability by devoting massive financial resources to distribution purposes.

4.3.2 Government Size, Wagner Law and Political Stability

The economic hypothesis or what is called Wagner law states that a government size grows to respond to new needs and requirements produced by the level of economic development (Martinez-Vazquez and Yao, 2009). It grows to satisfy needs produced by population growth rate, a high level of dependent groups, unemployment rate, income, urbanization and educational attainment. A high percentage of dependency ratio[260] among the population forces a government to enlarge its size to satisfy the health care needs of senior citizens and educational services of the population aged 15 and under (Lee, 1993). A high level of educational attainment ceterus paribus increases the demand for employment opportunities, which in turn enlarges government size. A high level of rural-urban migration increases demand on infrastructure and education (Kraay and Van Rijckeghem, 1995). The failure of a government size to grow in response to such needs increases the risk of political instability because it creates a sense of inequality that might drive aggrieved public to step up against a government (Bueno de Mesquita et al., 2003). Azam (2001) argues that that much of the political instability incidences in Africa are caused by a government failure to respond to public needs.

4.3.3 Government Size, The level of International Integration and Political Stability

Social insurance and the economic hypothesis state that a government size tends to grow in countries highly integrated with international markets. A government's size is used to stabilize the political environment through stabilization of its macroeconomic condition. The sector is used as a buffer against risk brought by international factors or to counteract the income and consumption fluctuations faced by families in the economy (Rodrik, 2000). Peacock and Wiseman (1963) cited by (Lee, 1993) indicate that a high level of integration with international markets measured by level of trade openness increases a country's exposure to international economic crises. In such an open economy a government tends to have a large government size to eliminate the level of restriction on macroeconomic management brought by a high level of integration. Cameron (1978) indicates that a high level of integration has advantages

[260] It is measured by the percentage of population aged 15 years and under or the percentage of population aged 65 years old and older.

and disadvantages. An advantage is that it feeds the domestic economic growth, which in turn increases employment rate and increases funds available for capital investment during boom periods. A disadvantage is that it restricts the effectiveness of macroeconomic policies because policy makers lose the ability to manage aggregate demand and control inflation as a result of a high level of integration between their domestic economy and international markets. Rodrick (2000) points out those countries with a high level of international integration such as Barbados, Botswana and Mauritius have large public sectors. Furthermore, the author indicates that countries that depend heavily on exporting natural resources tend to have a large public sector as buffer against economic risk that can be caused by fluctuations in their prices.

4.3.4 Government Size, Democracy and Political Stability

Political and economic hypotheses assume that a government size in democratic countries serves both political and economic objectives. Enlargement of government size using an implicit and inefficient distribution channel like public employment is selected over other explicit and efficient distribution channels to target specific segments of a society (Robinson and Verdier, 2002) in order to avoid political opposition associated with latter distribution channels (Alberto Alesina et al., 2000). The size continues to grow because of unemployment and lobbying for the creation of more public employment opportunities. A government responds to such pressure by creating more public employment opportunities for the sake of political stability (Gelb et al., 1991).

Politically, government size enlarges to improve re-election prospects and because of political inclusion. Darby, Li, and Muscatelli (2004) indicate that in modern democracies where government change is peaceful and follows pre-defined electoral procedures, political uncertainty is associated with government myopia. The myopia takes place when a government enlarges its size using inefficient distribution channels like public employment to increase its re-election prospects. Its size enlarges as a result of democracy that increases the level of political inclusion that gives all segments in a society the opportunity to express their needs and requirements efficiently (Lindert, 2004) cited by Grassi (2014). Furthermore, democracy strengthens the negotiation power of labor unions and political parties that escalates pressure on government to enlarge its size in response to their requirements (Bradley et al., 2003). There is overwhelming empirical and theoretical literature that the size of a government is used

strategically to gain votes and satisfy supporting constituencies in democratic countries (Carmignani, 2009).

Government size increases in democratic countries to further serve economic objectives such as income inequality and ethnic fractionalization. Grassi (2014) indicates that a government in democratic countries tends to enlarge in order to enhance the level of income quality and improve the living standards of some ethnic groups. Alberto Alesina et al. (2000) find empirically that employment in public sectors in some American cities is driven by the level of income inequality and ethnic fractionalization[261]. Alberto Alesina, Danninger, and Rostagno (1999) find empirically that public employment in Italy is used as a subsidy from the wealthy northern region to the less wealthy southern region. They estimate that one half of wage bills in the southern region can be considered as a subsidy. By doing so a government maintains and increases its popularity among the public which in turn increase the probablity of re-election (Alesina et al., 1999; Robinson and Verdier, 2002).

Government size is used strategically in autocratic countries. It is used in to form political alliances in order to reduce the risk of being overthrown (Darby et al., 2004). Public employment in both democratic and autocratic countries is considered as a form of clientelism and patronage where politicians offer patronage in exchange for votes or political support (Robinson and Verdier, 2002)

4.4 Expenditure on Education and Political Stability

A second policy option available to a government to stabilize the political environment is via creating public goods and services, amongst other expenditure on education. Expenditure on education brings stabilization at the level of the individual and at country level. At the level of the individual it increases the opportunity cost for an individual to commit instability incidences by broadening their prospective earning and employment opportunities. Also, it decreases the level of income inequality, one factor that determines the level of grievance in a society. Furthermore, it equips an individual with civic skills that makes it more likely for an individual to prefer settling disputes through discussion rather than violence. At the country level, it provides human resources required for economic growth, which in turn increases the level of wealth in a society and provides a government with financial resources that can be used

[261] Other empirical studies that investigate the impact of income inequality and ethnic fractionalization are Meltzer and Richards (1983) and Easterly (1997) respectively.

to develop further other public goods and services. Expenditure on education can be seen in this regard to create common benefits between a government and the public under the concept of a consensually strong state as indicated by Acemoglu (2005). The author points outs that a stabilization of the political environment requires creating common benefits between a state and society. Common benefits make the public tolerate a government's strength as measured by high taxes as long as a substantial percentage of these funds are used to create sufficient public goods and services. By doing so, a government successfully eliminates the risk of instability associated with insufficient educational opportunties. Knack and Keefer (1995) indicate that political instability is symptomatic of a state failure to provide public goods and services.

Public goods and services (in general) and education in particular show the public that a government is concerned about public prosperity which positively influences their perception towards a government and their interaction with it. Taydas and Peksen (2012) indicate that government can increase an individual's opportunity cost by stimulating economic development through a high level of expenditure in some sectors, including education. This enhances public popularity and support to a government. Porta et al. (1996) indicate that public co-operation is higher in regions of Italy where a government is perceived by the public as being efficient. Therefore, risk of political instability is reduced as found by Fjelde and De Soysa (2009) that a high level of government expenditure on public goods and services is associated with low probability of large and small incidences of political instability.

Expenditure on education increases an individual's opportunity cost and decreases the level of grievance in a society. It increases an individual's opportunity cost by broadening their prospective employment and earning opportunity as indicated by Chu, Davoodi, and Gupta (2000) which in turn makes rebel entrepreneurs a less feasible option. Richards (2003) cited by Thyne (2006) argue that the failure of Sierra Leone to invest in education increased the number of children who joined rebellion groups. Investment in education decreases the risk of political instability caused by a high level of grievance in a society by stimulating economic development and social and political equality (Collier and Hoeffler, 2004). In contrast, low expenditure on education enhances the level of grievance such as a high level of poverty and income inequality, which in turn increases the risk of political instability (Thyne, 2006).

Education enhances social and political stability by changing personal attitudes. Heyneman (2003) indicates that the stabilization effect of education goes through four

channels. First, it clarifies the right and obligation of citizenship as well as punishment in case of violation. Second, it brings different segments of society together and encourages them to work peacefully. Third, it provides equal opportunity for all citizens. Fourth, it combines the different interests and objectives of different groups under common citizenship.

Education assists governments in carrying out their working plans and provides them with financial resources to eliminate the risk of instability. Ritzen et al. (2000) argue that an educated population is more likely to accept policy reform because they understand that the short-term cost will be offset by benefits attained over the long run. It provides a government with the necessary financial resources to defend anti-government movements. Thyne (2006) argues that wealth brought by education increases the level of taxes so that a government has financial resources to increase an individual's opportunity cost to commit violence by outspending anti-government movements.

Empirical research confirms the positive association between educational attainment and stability (see, for example, Alesina and Perotti 1996, Collier and Hoeffler, 2004 and Barakat and Urdal, 2009). The stabilization effect of education on political environment is noted in democratic and autocratoc regimes. Brown and Hunter (2004) argue that several studies examine the impact of regime type on education expenditure in Latin America. The authors find that autocratic regimes spend less on education and experience more civil war than democratic regimes with high levels of expenditure on education. The authors indicate that the stabilization effect of education in autocratic regimes is achieved by stimulating economic development that gives legitimacy to the regime.

4.5 Consequences of Oversized Government

Although enlargement of government size lowers the impact of some factors on political instability, it has adverse impacts on some aspects of society. Past empirical research examines the impact of its size mainly on economic growth[262] and institutional quality[263].

[262] See for example Bergh and Henrekson (2010) that summarizes research on government size and its implications for economic growth.
[263] Comprise of law and order, corruption and bureaucratic quality.

There is little agreement in the literature on the nature of the relationship between a government's size and institutional quality. The first stream states it is negative and assumes that it is the government rather than the bureaucracy that is corrupted. The root cause of poor institutional quality such as a high level of corruption is a high level of government interference in economic environment and over-staffing in the public sector. Governmental interference without logic increases the level of corruption in a country (Montinola and Jackman, 2002) as a result of over-regulation, restrictions, and increasing the number of activities subject to governmental regulation (Huntington, 1968). These reflect the level of restrictions on economic environment (Pellegrini, 2011) and are considered by the public as a form of inefficiency in institutions and policies that aims to increase rent-seeking opportunities available to the bureaucracy[264] (see, for example, Tanzi 1994, Fisman and Gatti 2000 and Montinola and Jackman 2002). This governmental interference in economic activities diminishes the role of the private sector in labor markets and turns a government into an employer of last resort. Under such conditions government size continues to grow in order to absorb the unemployment rate, leading to overstaffing which in turn might have an adverse impact on morale and wage levels in the public sector. Jaimovich and Rud (2014) point out that creating massive public employment opportunities in Argentina increased the level of corruption because employees lacked the required skills or experienced a skills mismatch. Stevenson (1992) indicates that pressure on a government to absorb unemployment resulting from acting as an employer of last resort forces it to freeze wages, wage growth, or allow the real wage level to deteriorate. This has an adverse effect on employee morale, which in turn pushes them to assist their legal wage via other illegal ways like bribery. Several empirical studies confirm the negative association between government size and institutional quality (see, for example, Goel and Nelson 1998, Treisman 2000 and Ali and Isse 2003).

The second stream in the literature states that the relationship between institutional quality and government size is positive, using Scandinavian countries as an illustrative example [265]. This positive association is attributed to several factors. Large governments have sufficient financial resources to promote checks and balances and accountability measures as indicated by Kotera, Okada, and Samreth (2012). Friedman et al. (2000) argue that corrupt governments tend to be small because of a combination

[264] See Rose-Ackerman (1978, 1999) and Alesina and Angeletos (2005).

[265] See La Porta et al. (1999) and Billger and Goel (2009).

of onerous bureaucracy, high levels of corruption and a weak legal system that pushes firms underground and that correspondingly leads to a fall in government consumption. Montinola and Jackman (2002) indicate that a large government size might be driven by high levels of wages in the public sector, which makes public employees less likely to seek illegal payments, such that the level of corruption decreases. Husted and Estudios (1999) argue that the size of government can be large in a country where a government has a high level of public acceptance. Pellegrini (2011) indicates that while a government intervention reveals the level of restriction on the economy, it might indicate that there is a high level of expenditure on sectors that reduce the level of corruption such as education and health services. Empirical research confirms the positive association between the two variables although it is albeit weak (see, for example, Fisman and Gatti, 2002, Montinola and Jackman, 2002 and Adsera et al., 2003). Adsera et al. (2003) estimate that an increase in government consumption by 7% is associated with a reduction in the level of corruption by 0.2 points in a scale of 6.

The last stream in the literature suspects the existence of any relationship between a government's size and institutional quality and offers several explanations to support its view. Gelb et al. (1991) indicate that government size breeds corruption and rent seeking in a country with an ill-functioning economy or where there is weak political accountability. Rose-Ackerman (2007) argues that the quality of government bureaucracy is more important in determining the level of corruption than its intervention methods or its size. Some authors like Garen and Trask (2005) indicate that the proxy used to measure government size influences the relationship. The authors indicate that government size is measured exclusively in the literature using governmental expenditure; however, such measurements ignore other non-budgetary measurements so that their impact on the level of corruption outweighs the influence of budgetary measurements. Non-budgetary measurements include state ownership of enterprises, price control and restrictions on competition. They conclude from time series analysis that budgetary measurements give only a partial picture about its relationship with other variables. Alternatively, Montinola and Jackman (2002) suggest measuring government size by the number of public employees to capture its effect on the level of corruption. Lambsdorff (2007) suggests investigating the impact of specific types of expenditure (like redistributive expenditure) on the level of corruption rather than government expenditure. Empirically, some empirical research fails to establish a relationship between the two variables (see, for example, Husted and Estudios, 1999, Sandholtz and Gray, 2003 and Elbahnasawy and Revier, 2012).

Oversized public sectors have adverse effects on long-term economic growth by increasing current expenditure at the expense of capital expenditure. The latter expenditure is required to stimulate productivity in the private sector and increase the level of employment opportunities as indicated by Algan, Cahuc, and Zylberberg (2002). Schiavo-Campo, De Tommaso, and Mukherjee (1997) point out that empirical research in growth finds that there is a negative association between the level of government consumption and long run economic growth rate.

4.6 Impact of Government Size and Role on Political Instability: Theory

The main theory in this research is that a government enlarges its size or expands its role in order to eliminate the risk of political instability from factors suggested by opportunity and grievance perspectives. A government can enlarge its size by creating public employment to absorb unemployed youth under tight economic condition or as response to rapid change in urban growth rate or to react to high levels of educational attainment. Enlargement of its size might have adverse impacts on other aspects, such as enhancing the level of corruption. This is because its size increases in some instances based on non-productive and inefficient considerations. A government might decide to increase its expenditure on education as an alternative policy to enlarge its size to respond to rapid urban growth rate and a high rate of unemployment.

Enlargement of government size and expansion of its role might strengthen stability in a country because it shows the public a government's commitment to deal with poor performance of some aspects in a country. Expenditure on education, among other welfare expenditure, shows the public that a government cares about their living standards and that it devotes financial resources to improve it (Taydas and Peksen (2012). Enlargement of government size by creating public employment to target less fortunate segments of society or to meet the needs and requirements of urbanization helps to buy off opposition movements and less fortunate segments of society so that a long-term interest between a government and the public is established (Fjelde and De Soysa, 2009). This enhances a government's popularity among the public because it successfully addresses factors leading to their dis-satisfaction (Robins, 2012). On the other hand, the failure of a government to enlarge its size or to expand its role indicates a weakness of the state's ability to manage and control a society; as a consequence, opportunity theory assumes an individual's opportunity cost to commit political instability incidences decreases. Furthermore, it increases political and economic dissatisfaction among the public which reduces public trust for the political regime

(Taydas et al., 2010). Such risk is higher in autocratic than democratic countries because the public in the former might rely on violence to demonstrate their dissatisfaction whereas in the latter the public can discipline politicians with poor performance in elections (Andvig, Fjeldstad, Amundsen, Sissener, and Søreide (2001). Anderson and Tverdova (2003) find in panel data analysis a significant positive association between the level of evaluation of state capacity and the level of trust for the political system and conclude that desperate conditions can lead the public toward radical change of a system.

A government can enlarge its size to absorb unemployment among youth or expand its role to address low employment and educational opportunities. History partially attributes some incidences of instability to shortages in employment and educational opportunities. For example, Trends (2001) indicates that successful coups in Turkey in 1970 and 1980 are attributed partially to low educational and employment opportunities available for youth. Several factors force a government to enlarge its size to absorb unemployment. The failure of the private sector to create employment opportunities (Robinson and Verdier, 2002) and a weak or absent temporary unemployment benefits system forces a government to create public employment to address imperfections in the labor market (see, for example, Alesina et al., 1999 and Robinson and Verdier, 2002). By doing so, a government succeeds in eliminating the risk of unemployment and some related factors like income inequality on political environment, as found by empirical research that public employment in some instances is used by a government to deal with income inequality or other forms of inequality (see, for example, Alesina et al. 1999, 2000). Alternatively, a government might consider expanding its role by increasing expenditure on education to address shortages of educational and employment opportunties. Expanding its role can mitigate the adverse impact of unemployment on the political environment resulting from skill mis-match or changes in labour market requirements. Riddell and Song (2012) find that the probability of re-employment is enhanced among unemployed youth when they seek further education at secondary and post-secondary level. Furthermore, expenditure on education can enhance stability through increasing an individual's opportunity cost and boosting long-term economic growth. According to the opportunity perspective, education increases an individual's opportunity cost to join a rebellion movement by increasing his/her value in the labor market and expanding their prospective income-earning opportunities (Collier, 2000a). A government's expenditure on education feeds long-term economic growth and helps to create the perception among the public that the

government prefers stability rather than instability. Li et al. (2000) and Gupta et al. (2001) indicate that expenditure on education enhances stability over the long run by increasing economic growth and consequently, employment opportunities. The empirical literature has found education to be among the determinants of economic growth (see, for example, Barro, 1992 and Levine and Renelt, 1992 cited by Gupta et al., 2000). In contrast, low education attainment leads to poor economic growth, which in turn increases the unemployment rate in a country.

A government uses its size to create public employment in response to high levels of educational attainment that exceed demand in the labour market or because of skills mismatch with the requirements of the labour market. Alesina et al. (2000) indicate that a government size tends to grow with the corresponding level of educational attaintment. Gelb et al. (1991) indicate that creating public employment in some countries is used to absorb university graduates, and in some instances is protected and expanded gradually, like in Latin America. By accommodating educated youth in public posts a government addresses the destabilization effect of education on political environment resulting from high educational attainment in a country that experiences low employment opportunties. Collier (2000) indicates that on the one hand education increases an individual's opportunity cost to join a rebellion movement by increasing his/her value in the labour market and expanding their prospective income-earning opportunities. On the other hand, education increases the risk of political instability when the educated person's expectations of employment opportunities and associated financial benefits are not met. This decreases an individual's opportunity cost and it becomes more likely for them to join rebellion movements.

A government also enlarges its size or expands its role because of a high urban growth rate that creates pressure on labour markets, educational institutions and infrastructure and to meet needs and requirements of the level of economic development. Growth rate of urbanization that exceeds the growth rate of employment and educational opportunities increases the level of grievance and consequently, increases the level of political instability (Urdal, 2006). Ross et al. (2011) cites the case of MENA to show that rapid change in urban growth rate enhances the unemployment rate. In other instances its size enlarges and its role expands in response to new needs and requirements produced by the level of economic development according to Wagner law (Martinez-Vazquez and Yao, 2009). A high level of rural-urban migration increases demands on infrastructure, education and employment opportunities (Kraay and Van

Rijckeghem, 1995). All these factors create pressure on government to expand its role, size (or both together) to decrease its adverse impact on political environment. The failure of government to accommodate growing demand on employment and educational opportunities created by rapid growth in urban population depreciates living standards, which leads to public dissatisfaction that might turn into instability (Turchin, 2013).

Government might further consider enlarging its size to eliminate the risk of a high level of integration with international markets on the political environment according to the social insurance and economic hypothesis (Rodrik, 2000).

Enlargement of government size is expected to increase the level of corruption as a result of pressure on government to continue creating public employment and non-merit recruitment. A government might respond to pressure to create public employment or financial pressure to meet wage bills by freezing wages, wage growth, or allowing the real wage level to deteriorate, with adverse impacts on the living standards of employees that leads them to consider bribery to assist their wages (Stevenson, 1992). The level of corruption increases because enlargement of government size in some instances is driven by political, nepotism and patronage considerations rather than merit-based criteria (Tanzi, 1998). A combination of a high level of corruption and lack of qualified human resources sustains poor bureaucratic quality through increasing the demand on public sector posts that are associated with a high opportunity for rent seeking. Tanzi (1998) indicates that in some countries there is a high level of competition to apply for poorly paid jobs with high potential for rent seeking opportunities such as jobs in taxes and customs sectors. Svensson (1998) indicates that when corruption is widespread, institutionalized employees in private sectors leave their jobs to work in public posts from which they can generate extra illegal income. A combination of the adverse impacts of corruption on different aspects of society and oversized public sector reduces public living standards that in turn enhances political instability.

In light of the previous discussion, this chapter will test the independent effect of government size and its interaction with unemployment, corruption, educational attainment, trade openness and urban growth rate on political instability as following hypotheses show. It also tests the independent effect of the expenditure on education and its interaction with unemployment and urban growth rate on political instability. All models used in empirical analysis will include youth unemployment, rents from natural

resources, trade openness, GDP annual growth, level of democracy, gross tertiary enrolment, logarithm of total population and urban growth rate as control variables to support the hypotheses, the expected sign of the government size, expenditure on education and control variables are shown in the table 4.1.

$Hypothesis_1$ *: Countries with a larger government size are less likely to experience political instability.*

$Hypothesis_2$*: The larger the size of government in a country, the lower the impact of unemployed youth on the political instability.*

$Hypothesis_3$*: The larger the size of a government in a country, the larger the impact of corruption on the level of political instability.*

$Hypothesis_4$*: The larger the size of government in a country, the lower the impact of high gross tertiary enrolment on the political instability.*

$Hypothesis_5$*: The larger the size of a government in a country the lowers the impact of trade openness on the political instability.*

$Hypothesis_6$*: The larger the size of a government in a country, the lower the impact of urban growth rate on the political instability.*

$Hypothesis_7$ *: Countries with a larger government role are less likely to experience political instability.*

$Hypothesis_8$: *The larger the role of a government in a country, the lower the impact of unemployment on the political instability.*

$Hypothesis_9$*: The larger the role of a government in a country, the lowers the impact of urban growth rate on the political instability.*

Table 4.1 The Expected Relationship Between Political Instability and Independent Variables

Variable	Expected sign with Political instability
Government size (GS)	Negative
Government role (GR)	Negative
GS*TYU	Negative
GS*Corr	Positive
GS*GTE	Negative
GS*TO	Positive
GS*UGR	Negative
GR*TYU	Negative
GR*UGR	Negative
Total youth unemployment (TYU)	Positive
Trade openness (TO)	Negative
GDP annual Growth (GDP)	Negative
Rents from natural resources (Rents)	Positive/ Negative
Level of democracy (RT)	Negative
Corruption (Corr)	Positive
Gross tertiary enrolment (GTE)	Positive
Urban growth rate (UGR)	Positive
Log of total population (log T.pop)	Positive

4.7 Empirical Model, Data and Methodology

The nine hypotheses set earlier will be examined empirically using unbalanced panel data from 1984 to 2013.

4.7.1 Model Specification: The Independent Effect of Government Size and Government Role on Political Instability

The model of the independent effect of government size on the level of political instability will be estimated using the following empirical model:

$$PS_{it} = \beta_0 + \beta_1 (GS)_{it} + \beta_2 (eco)_{it} + \beta_3 (poli)_{it} + \beta_4 (socio)_{it} + e_{it} \quad \ldots\ldots\ldots\ldots (4.1)$$

Where:

PS is political instability

GS is government size

Eco is economic variables that comprise rents from natural resources, total youth unemployment, trade openness, and economic growth.

Poli is political variables that comprise level of democracy and corruption.

Socio is social variables that comprise logarithms of total population, gross tertiary enrolment, and urbanization growth rate.

The independent effect of government role on the level of political instability will be examined by replacing government size in equation (4.1) with government role:

$$PS_{it} = \beta_0 + \beta_1 (GR)_{it} + \beta_2(eco)_{it} + \beta_3(poli)_{it} + \beta_4(socio)_{it} + e_{it} \quad \text{.....(4.2)}$$

4.7.2 Model Specification: The Joint Effect of Government Size and other Factors on the Level of Political Instability

The second to ninth hypotheses will examine the impact of the joint effect between government size and other determinants of political instability included in the model. Each joint effect will be included and tested individually.

$$PS_{it} = \beta_0 + \beta_1 (GS)_{it} + \beta_2(eco)_{it} + \beta_3(poli)_{it} + \beta_4(socio)_{it} + \beta_5(GS * TYU)_{it} + e_{it} \quad \text{.....(4.3)}$$

The first joint effect between government size and youth unemployment on instability will be captured as β_5 in the empirical model (4.3). Its impact on the level of political instability will be captured as follows:

$$dPS_{it} / dGS_{it} = \beta_1 + \beta_5 TYU_{it} \quad (4.3a)$$
$$dPS_{it} / dTYU_{it} = \beta_2 + \beta_5 GS_{it} \quad (4.3b)$$

When $\beta_5 < 0$ in equation (4.3a) a one percentage increase in government size yields greater reduction in the risk of political instability with a higher rate of unemployment. Similarly if $\beta_5 < 0$ in equation (4.3b), then a one percentage point increase in unemployment rate yields greater reduction in the risk of political instability with larger government size.

The joint effect between government size and corruption will replace the previous joint effect in the empirical model (4.3). It will capture its effect on political instability as follows:

$$dPS_{it} / dGS_{it} = \beta_1 + \beta_5 Corr_{it} \quad (4.3c)$$
$$dPS_{it} / dCorr_{it} = \beta_3 + \beta_5 GS_{it} \quad (4.3d)$$

When $\beta_5 > 0$ in equation (4.3c) then one percentage enlargement in government size yields greater risk of political instability in a country with a higher level of corruption. Similarly, if $\beta_5 > 0$ in equation (4.3d) then a one point increase in the level of corruption yields greater risk of political instability in a country with larger government size.

The joint effect of government size and gross tertiary enrolment on the level of political instability will be examined as follows:

$$dPS_{it} / dGS_{it} = \beta_1 + \beta_5 GTE_{it} \quad (4.3e)$$
$$dPS_{it} / dGTE_{it} = \beta_4 + \beta_5 GS_{it} \quad (4.3f)$$

When $\beta_5 < 0$ in equation (4.3e) a one percentage increase in government size yields greater reduction in the risk of political instability in a country with a higher level of gross tertiary enrolment. Similarly if $\beta_5 < 0$ in equation (4.3d), then a one percentage point increase in gross tertiary enrolment yields greater reduction in the risk of political instability in a country with larger government size.

The joint effect of government size and trade openness on the level of political instability will be examined as follows:

$$dPS_{it} / dGS_{it} = \beta_1 + \beta_5 TO_{it} \quad (4.3g)$$
$$dPS_{it} / dTO_{it} = \beta_2 + \beta_5 GS_{it} \quad (4.3h)$$

When $\beta_5 > 0$ in equation (4.3g) then one percentage enlargement in government size yields greater reduction in the risk of political instability in a country with a lower level of trade openness. Similarly, when $\beta_5 > 0$ in equation (4.3h), then a one percentage increase in trade openness yields greater reduction in the risk of political instability when a country has a smaller government size.

The joint effect of government size and urban growth rate on the level of political instability will be examined as follows:

$$dPS_{it} / dGS_{it} = \beta_1 + \beta_5 UGR_{it} \quad (4.3i)$$
$$dPS_{it} / dUGR_{it} = \beta_4 + \beta_5 GS_{it} \quad (4.3j)$$

When $\beta_5 < 0$ in equation (4.3i) a one percentage increase in government size yields greater reduction in the risk of political instability in a country with a higher rate of urban growth. Similarly if $\beta_5 < 0$ in equation (4.3j), then a one percentage point increase in urban growth rate yields greater reduction in the risk of political instability in a country with a larger government size.

4.7.3 Model Specification: The Joint Effect of Government Role with Youth Unemployment and Urban Growth Rate on the Level of Political Instability

The first joint effect between government role and youth unemployment on instability will be captured by β_5 in the empirical model (4.2). Its impact on the level of political instability will be captured as follows:

$$\mathrm{d}PS_{it} / \mathrm{d}GR_{it} = \beta_1 + \beta_5 TYU_{it} \quad (4.2a)$$
$$\mathrm{d}PS_{it} / \mathrm{d}TYU_{it} = \beta_2 + \beta_5 GR_{it} \quad (4.2b)$$

When $\beta_5 < 0$ in equation (4.2a), a one percentage increase in government role yields greater reduction in the risk of political instability in a country with a higher percentage of youth unemployment. Similarly, when $\beta_5 < 0$ in equation (4.2b) a one percentage increase in youth unemployment yields greater reduction in the risk of political instability in a country with a larger government role.

The second joint effect between government role and urban growth rate on instability will be captured by β_5 in the empirical model (4.2). Its impact on the level of political instability will be captured as follows:

$$\mathrm{d}PS_{it} / \mathrm{d}GR_{it} = \beta_1 + \beta_5 UGR_{it} \quad (4.2c)$$
$$\mathrm{d}PS_{it} / \mathrm{d}UGR_{it} = \beta_4 + \beta_5 GR_{it} \quad (4.2d)$$

When $\beta_5 < 0$ in equation (4.2c), a one percentage increase in government role yields a greater reduction in the risk of political instability in a country with a high urban growth rate. Similarly, when $\beta_5 < 0$ in equation (4.2d) a one percentage increase in urban growth rate yields greater reduction in the risk of political instability in a country with a larger government role.

4.7.4 Data Description

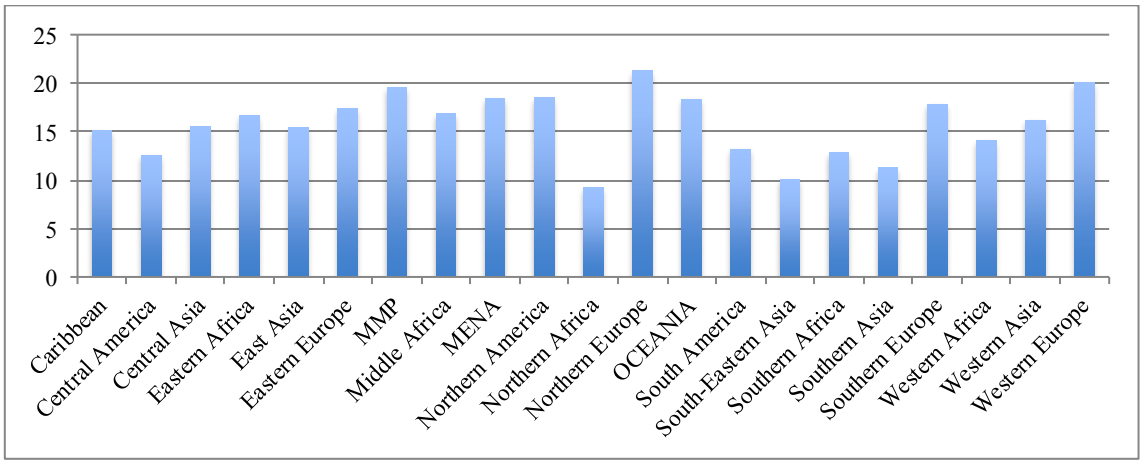
In this study two proxies are used to measure government capacity to eliminate the risk of political instability. These proxies stem factors that contribute to government capacity, namely government size and government role. The literature suggests several proxies to measure government size. In this study government size is measured as the ratio of general government final consumption to GDP[266]. This ratio includes current

[266]This study considers using alternative measurements of government size, such as total public sector employment (it includes employment in governmental organizations and publicly owned organizations) to total employment (in public and private sectors). Furthermore, it considers the ratio of wage bills to government revenue or to expenditure or to national gross domestic products or the percentage of public

government expenditure of all goods and services including employees' compensation. Furthermore, it includes all expenditure on national security and defense. The proxy is log transformed; data is collected from the World Development Indicators.

Figure 4.2 shows government size across different world regions[267]. It shows that regions can be categorized into three groups according to their government size: regions with government size from 10% to less than or equal 15%; more than 15% to less than or equal 20%; and more than 20% to GDP. Regions falling in the first group (between 10% to 15%) include Northern Africa, South East Asia, South Asia, Central America, South America, South Africa and the Caribbean. Only North Europe spends more than 20% of GDP while the remaining regions in the world fall in the second group.

Figure 4.2 Government Size Across the World

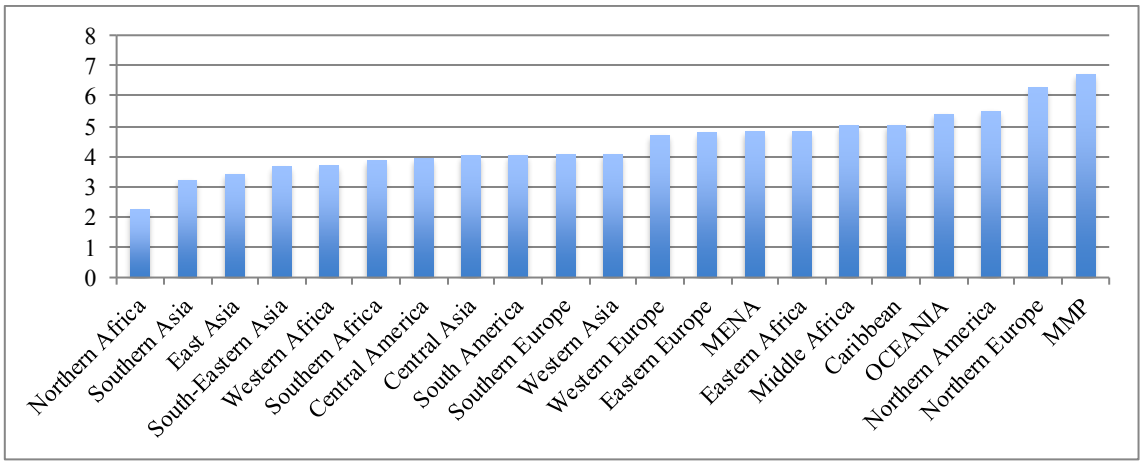


The second measurement is government expenditure on education as a proxy of government role. It is measured as the general government expenditure on education as percentage to GDP (current, capital and transfers). The variable is log-transformed; the data is collected from the World Bank Development Indicators. Figure 4.3 shows expenditure on education across different regions of the world. It shows that Northern Africa has the smallest government role. Regions in the world can be categorized into regions spending less than 2% on education and regions spending more than 2%. The latter group comprises the European continent (except the southern part), MENA, Eastern and Middle Africa, Caribbean, Oceania, Northern America and Micronesia, Melanesia and Polynesia.

employees to total population. However, the quality and time and country coverage restricts using any of these in the empirical analysis.

[267] Descriptive statistics are located in the appendix.

Figure 4.3 Government Role Across the World



Other variables used in the empirical analysis are similar to the variables used in the second and third chapters.

4.8 Estimation Strategy

This study aims to investigate the influence of government size and its role on the role of youth bulge on instability in countries with different percentages of youth bulge, which is considered as a latent variable across all sub-samples. The study creates dummy variables for democratic countries, oil countries, countries where the percentage of youth bulge is more than 30% and countries where their percentage is less than or equal to 30% and the MENA region[268]. These dummies capture variation in variables included in the model and at the same time maintain a sufficient number of observations under each dummy to carry out the empirical analysis. Furthermore, these dummies take into account the impact of latent variables that are not captured by variables included in models that might turn youth bulge into either demographic dividends or curse.

Government size and role show insignificant differences between democratic and autocratic countries as Figure 4.4 shows; however, there is significant variation in the percentage of youth bulge and some independent variables between these two groups of countries. The percentage of youth bulge in democratic countries is 23% while in autocratic countries the percentage is more than 30%. Furthermore, there is a significant difference in factors increasing government size and its role between the two groups such as urbanization growth rate and gross tertiary enrolment; however, there are

[268] Readers are advised to refer to Section 2.5 in Chapter 2 for criteria used to group countries into oil and non-oil and democratic and autocratic countries.

insignificant differences in other variables such as trade openness and unemployment[269]. In addition, democratic countries perform better in the level of corruption than autocratic countries, which is an indirect measure of the quality of government size[270]. In some instances, increasing the level of public employees does not indicate that public services are delivered efficiently and sufficiently because corruption sets the criteria for delivering public services. Alternatively, it might be that a government size enlarges because of ghost workers. Reuters News Agency reports that there are fifty thousand ghost soldiers in the Iraqi army that prevent the army from providing security services efficiently and that contributed to its collapse to Islamic State fighters (Reuters, 2014).

The oil dummy aims to capture the impact of government size and it role on instability in oil and non-oil countries. Although its size and role are almost similar between the two groups as shown in Figure 4.4, there are important differences between the two groups. Oil countries do not need to increase or expand taxation in order to finance government size and role, in contrast to non-oil countries. In non-oil countries, enlargement of government size and role entails increasing and expanding the level of taxation on productive sectors (as discussed earlier). Under such a scenario a government might succeed in settling the adverse impact of some factors on the political environment at the expense of economic growth and creation of employment opportunities. A high level of taxation on the productive sector forces companies to operate underground, which hurts public finance and employment opportunities over the long run. Non-oil countries perform better in the level of democracy than oil countries[271] that might have an impact on allocation of public resources across sectors. Similarly, the level of corruption is better in non-oil countries, which might have an influence on the quality of government size and role. There is also variation between the two groups in some factors that determine government size and role such as urban growth rate and gross tertiary enrolment[272].

The impact of government size on instability is examined in countries where the percentage of youth bulge is less than or equal to 30% and in countries where the percentage is more than 30%. Figure 4.5 shows a significant difference between the two groups in some variables. One important variation can be noted in government size between the two groups: a country where the percentage of youth bulge is more than

[269] From descriptive analysis in the second chapter.
[270] From descriptive analysis in the third chapter.
[271] From descriptive analysis in the second chapter.
[272] From descriptive analysis in the third chapter.

30% has smaller government size. Similarly, other factors that determine government size such as education and the level of democracy are higher in countries where the percentage of youth bulge is less than 30%.

Figure 4.4 Government Size and Role Under Different Contexts

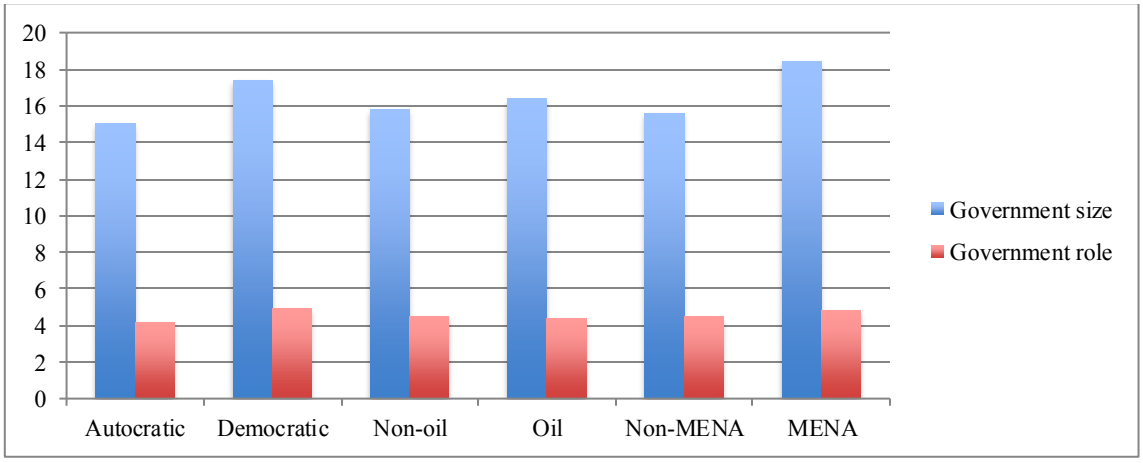
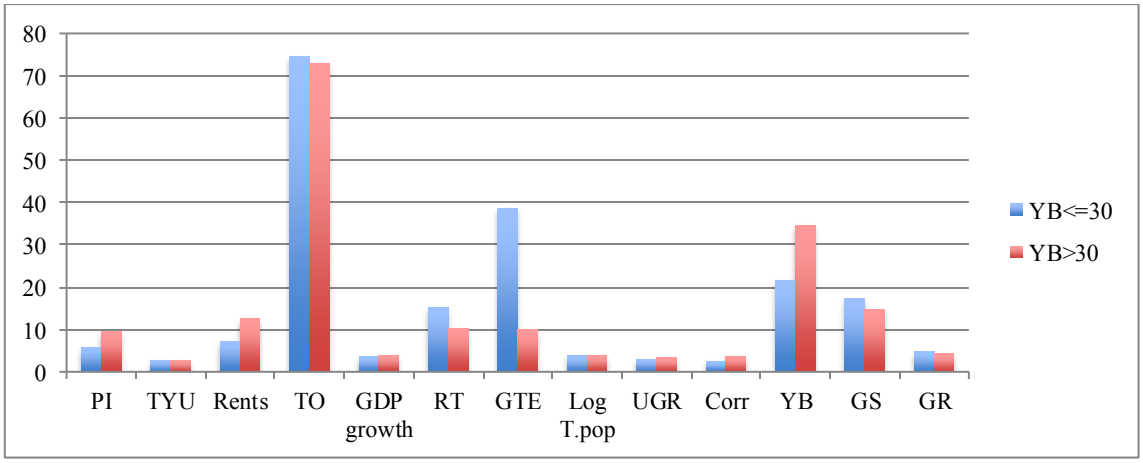


Figure 4.5 Political Instability and Independent Variables in Countries Based on the Percentage of Youth Bulge



The last sub-sample is for the MENA region that aims to capture the impact of government size and role on instability in the region. The empirical results in the second and third chapters show that poor performance in some factors like employment feeds instability in the region. In this chapter the role of government and its size on political instability in the region is investigated in order to capture its capacity to offset the adverse impact of rapid change in some aspects of socioeconomic and political context on political environment in the region.

In this study the empirical models will be estimated using 2SLS because of two way causation between economic growth and instability as discussed in the second

chapter. The endogeneity test shows that GDP annual growth is endogenous. One-year lag of GDP annual growth is used as an instrument due to the difficulty of finding an appropriate external instrument[273]. The impact of youth unemployment, corruption, education, trade openness, and urban growth rate on political instability moderated by government size will be tested individually. Similarly, the impact of youth unemployment and urban growth rate on political instability moderated by government role will also be tested individually.

Robustness analysis is carried out using an alternative estimation technique (fixed period effect), an alternative measure of political instability adopted from Saha and Yap (2013) and an alternative measure of government consumption from the Heritage Foundation. Fixed effect (period) is considered rather than unit effect because independent variables are time variant. Furthermore, fixed effect is selected over random effect to account for possible correlation between independent variables and omitted variables. The alternative measure of political instability aims to capture the variation in effect between the measure used in this study and the broader measure considered by Saha and Yap (2013). The alternative measure of government size from the Heritage Foundation aims to capture the effect using an alternative method to calculate government consumption.

This study uses heteroskedasticity and autocorrelation-consistent standard error to reduce the effect of heteroskedasticity on the empirical results. This method does not assume homoskedasticity and it does not require knowledge about or functional form of heteroskedasticity like weighted least squares. Furthermore, it does not need to go through arbitrary transformation of independent variables or computer stimulation (Hayes and Cai, 2007). This method addresses the effect of autocorrelation on t-statistics and p-value without needing to go through trial and error methods (Gujarati, 2014).

4.9 Empirical Results: The Independent Effect of Government Size on Political Instability

Models 1 to 6 in Table 4.2 test the impact of government size on political instability under different sub-samples. Figure 4.6 shows that there is a negative

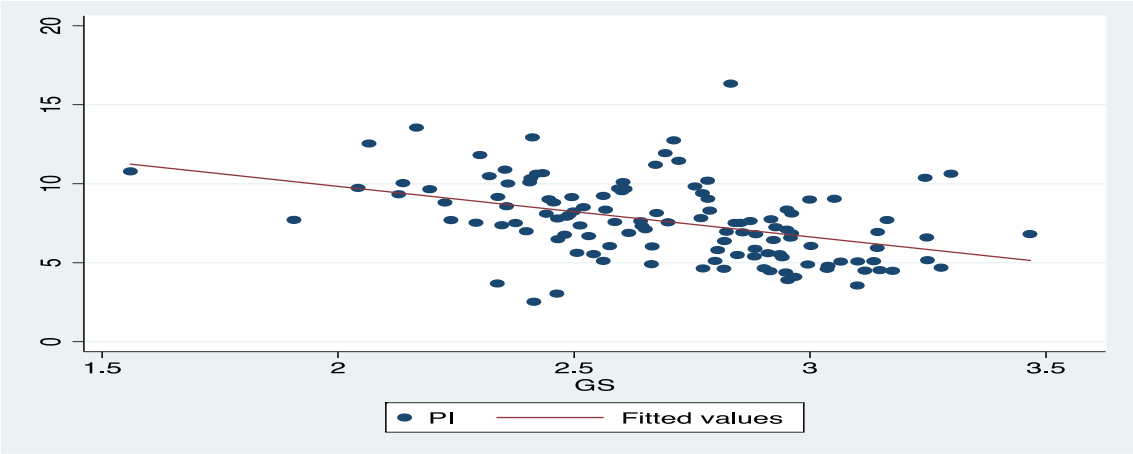
[273] Endogeneity test and the validity of of year lag of GDP economic growth are given in appendix D table D2.1.

association between the two variables. It suggests that a government can lower political risk by enlarging its size.

Model 1 examines the impact of the independent effect of government size on political instability in panel data. The coefficient of government size is negative and significant at the 1% level, suggesting that a large government size reduces political instability. Political stability is enhanced in Sudan by 0.614 units or 34% of one standard deviation of political instability by each one standard deviation enlargement in government size[274]. Sudan needs to enlarge its current government size by 337% to improve its level of political stability to the average level of the entire sample[275]. Descriptive statistics show that the average annual growth of government size in Sudan over the sample period is 2.16% whereas the average annual growth of one important segment in the population, youth bulge, is 3.6%. The analysis, all other things being constant, reveals that the growth in size of a government does not keep pace with the growth rate of youth bulge. Further analysis at country level shows that countries where the average annual growth in government size is less than the growth rate in youth bulge face a higher risk than countries where annual growth size is higher than youth bulge. Political instability increases when government fails to enlarge its size in response to public needs and requirements. It also enhances when a government is a sole provider of goods and services in a country. Taydas et al. (2010) point out that a government failure to enlarge its size to respond to public needs increases their political and economic dissatisfaction which enhances political instability. Control variables have a significant sign.

[274] The coefficient of the government size *(0.347) (its St. dev in Sudan) = 1.771 unit or 34% of one standard deviation of political instability by dividing (1.771*100)/(5.224) (St. dev of political instability in Sudan).
[275] The difference of the average score of political instability in Sudan and the average score of the entire sample/ the coefficient of a government size [(13.555-7.580) /1.771]*100=337%.

Figure 4.6 Political Instability and Government Size over the period 1984-2013



The impact of government size is further investigated in countries where the percentage of youth bulge is equal to or less than 30% and countries where their percentage is more than 30%; the results are shown in Models 2 and 3, respectively. The independent effect of government size has a negative coefficient; however, it is only significant and its coefficient substantially higher in countries where the percentage of youth bulge makes up more than 30% of total population. Enlargement of government size in this group of countries lowers political instability by 1.268 units or 64% of a standard deviation of political instability[276] in comparison with 0.106 units or 10% in countries where their percentage is less than or equal to 30%[277]. The results suggest that a government can play a major role in stabilizing the political environment in countries where youth bulge is more than 30%, all other things being constant. It could be that in these countries enlargement of government size achieves dual objectives: it addresses youth bulge requirements and it improves quantity and quality of public goods and service available in a country.

The impact of government size on political instability is estimated in two sub-samples where the percentage of youth bulge is more than 30%. These sub-samples have different government sizes: countries with a government size above the sample average of 2.588 and countries where its size is below the average). The results find that size has a positive sign and is significant in countries where its size is below the average; this suggests that government size grows but does not reach the level required

[276] The coefficient of the government size *(0.451) (its St. dev in countries where youth bulge make up more than 30%) = 1.268 unit or 64% = (2.813*100)/(4.388) (the St. dev of political instability in this group of countries).
[277] The coefficient of the government size *(0.342) (its St. dev in countries where youth bulge make up less than 30%) = 0.106 unit or 10% = (0.311*100)/(3.072) (the St. dev of political instability in this group of countries)

to stabilize the political environment. On the other hand, its negative and insignificant sign in countries above average size suggests that enlargement brings stability[278].

Model 4 examines the impact of government size on political instability in oil countries[279]. The independent effect of government size has a negative sign and is significant at the 1% level, suggesting that the enlargement of its size lowers the level of political instability; however, its stabilization effect is higher in oil than non-oil countries as the interaction term between oil and government size has a negative sign although it is not significant. Enlargement of government size in oil countries lowers the risk of political instability by 0.791 units or 51% of a standard deviation of political instability[280] in comparison with 0.646 units or 39% in non-oil countries[281].

The importance of government size to stabilize political environment in oil and non-oil countries is driven by different factors. In oil countries, a government needs to enlarge its size for several reasons, which among others includes mitigating the adverse impact of the Dutch disease on labour markets. The disease absorbs intensive labour and resources from non-oil sectors (Sachs and Warner, 1997). Hence, a government needs to enlarge its size in response to failure of the labour market to absorb job seekers. In non-oil countries, the public expects government to enlarge its in response to their needs and requirements as a means of return of their taxes. Such needs are produced by the level of economic development, as stated by the Economic hypothesis or what is called Wagner law (Martinez-Vazquez and Yao, 2009). The failure to do so enhances political instability directly and indirectly. The shortage in quantity and quality of public goods and services has a direct impact on political instability. Indirectly, it might increase tax evasion and reduce public acceptance of increases in tax level, which in turn has a negative impact on a government's ability to exercise its duties. Acemoglu (2005) points out that common benefits make it more likely for the public to tolerate a government's strength measured by high taxes as long as a substantial percentage of it is used to create sufficient public goods and services. Control variables retain their sign and significance except level of democracy.

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[278] Results not reported.
[279] Rents from natural resources are replaced by oil dummy.
[280] The coefficient of a government size + its coefficient in oil countries= -2.073*(0.382)(St. dev of a government size in oil countries)= 0.791 unit or 51% (-2.073*100)/(4.072)(St. dev of political instability in oil countries).
[281] The coefficient of a government size*(0.413)(St. dev of a government size in non-oil countries)= 0.646 unit or 39% (-1.566*100)/(3.985)(St. dev of political instability in non-oil countries).

Model 5 investigates the impact of government size on political instability in democratic countries. The independent effect of government size has a negative sign and significant coefficient at the 5% level, suggesting that enlargement of government size lowers the level of political instability. Government size is equally important in stabilizing the political environment in democratic and autocratic countries; however, its stabilization effect is lower in democratic than autocratic countries. This indicates that democratic practices are insufficient to offset the impact of small government size on political instability. Enlargement of government size by a standard deviation in autocratic countries stabilizes political environment by 1.006 units or 53% of one standard deviation of instability[282] while in democratic countries it enhances political stability by 0.269 units or 27% of political instability[283].

The lower impact of government size on political stability in democratic than autocratic countries may be due to a high level of political inclusion in democratic countries. Political inclusion provides equal opportunity to all segments of society to express their needs and requirements (Lindert, 2004). Under such conditions a government is in a position to screen their needs and prioritize them according to their importance to the public. This might reveal that while enlargement of government size is important to some sectors in the population, cutting taxes may be more important for other sectors. Hence, in democratic countries enlargement of government size alongside alternative policy options enhances political stability. In autocratic countries, enlargement in size reduces pressure created by the public on government to introduce democracy. Darby et al. (2004) indicate that government size is used in autocratic countries to create political alliances in order to reduce the risk of being overthrown. From general reading of the author of this study, the public in autocratic monarchies in the Arabian Peninsula in the wake of the so-called the Arab Spring in late 2010 raised several demands, such as installing constitutional monarchies and more employment opportunities. Governments enlarged their size in response to employment demands, which abolished public demand to move to constitutional monarchies. In general, control variables retain their sign and significance.

The impact of government size on political instability in the MENA region is investigated in Model 6. The independent effect of government size has a negative

[282] The coefficient of a government size*(0.437)(St. dev of a government size in autocratic countries)= 1.006 unit or 53% (-2.303*100)/(4.348)(St. dev of political instability in autocratic countries).
[283]The coefficient of a government size + its coefficient in democratic countries= -0.806*(0.334)(St. dev of a government size in democratic countries)= 0.269 unit or 27% (-0.806*100)/(2.948)(St. dev of political instability in democratic countries).

coefficient suggesting that the enlargement of its size lowers the level of political instability; but its stabilization effect is negligent in the MENA region[284]. Governments in the MENA region lower the risk of political instability by 0.028 units or 2% of one standard deviation of political instability when government size is enlarged by a standard deviation[285] in comparison with 0.349 units or 21% in non-MENA region[286].

The weak stabilization effect of government size on political environment in the MENA region might be because some governments in the region take financial measures to continue enlarging government size. Stevenson (1992) indicates that some governments freeze wages, wage growth, or allow the real wage level to deteriorate in order to continue enlarging its size. For example, from the author's general reading, recently the Egyptian government announced that it might take several measures, one of which is to downsize its government sector because of difficulties in meeting employees salaries. Furthermore, it announced that former governments in the country were hesitant to take such measures in order to avoid prospective outrage from the public. It could be that the size of government in the MENA region reaches the level that has a low marginal effect on political environment.

[284] The model is re-estimated by dropping monarchies in the Arabic Peninsula and the results retain their sign and significant; the results are not reported.
[285] The coefficient of a government size + its coefficient in MENA countries= -0.088*(0.329)(St. dev of a government size in MENA countries)= 0.028 unit or 2% (-0.088*100)/(4.366)(St. dev of political instability in MENA countries).
[286] The coefficient of a government size*(0.416)(St. dev of a government size in non-MENA countries)= 0.349 unit or 21% (0.839*100)/(3.977)(St. dev of political instability in non-MENA countries).

Table 4.2 The Independent Effect of Government Size on Political Instability over the Period 1984-2013

Independent variable	Dependent variable: Political instability					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
TYU	0.743*** (0.195)	1.180*** (0.157)	-0.876 (0.704)	0.759*** (0.195)	0.715*** (0.184)	0.986*** (0.181)
Rents	-0.039*** (0.014)	-0.036* (0.021)	-0.028 (0.025)		-0.025** (0.013)	0.001 (0.013)
TO	-0.007*** (0.001)	-0.004*** (0.001)	-0.003 (0.012)	-0.007*** (0.001)	-0.005*** (0.001)	-0.004*** (0.001)
GDP growth	-0.294*** (0.071)	-0.193*** (0.072)	-0.519 (0.330)	-0.316*** (0.076)	-0.261*** (0.071)	-0.225*** (0.069)
Government Size	-1.771*** (0.512)	-0.310 (0.545)	-2.812** (1.418)	-1.566*** (0.508)	-2.303** (0.923)	-0.839 (0.530)
RT	-0.120*** (0.047)	-0.167*** (0.160)	-0.044 (0.086)	-0.125*** (0.045)		-0.278*** (0.064)
GTE	-0.044*** (0.006)	-0.035*** (0.006)	-0.046 (0.040)	-0.045*** (0.007)	-0.036*** (0.005)	-0.041*** (0.006)
Log.T pop	0.845*** (0.220)	0.946*** (0.202)	0.591 (1.024)	0.770*** (0.226)	0.890*** (0.216)	0.812*** (0.214)
UGR	0.113*** (0.042)	0.107** (0.043)	0.045 (0.120)	0.096** (0.045)	0.074* (0.039)	0.116*** (0.040)
Oil				-0.347 (4.987)		
Oil*Government size				-0.507 (1.767)		
DD					-5.778** (2.822)	
DD*Government size					1.497 (1.040)	
MENA						-7.129 (4.604)
MENA*Government size						0.751 (1.651)
Constant	10.864*** (2.747)	5.048* (2.823)	18.621** (8.893)	10.770*** (2.747)	10.557*** (2.817)	10.245*** (2.606)
Adjusted R square	22%	25%	30%	21%	27%	31%
Number of observation	580	484	97	583	589	580
Estimation method	2sl					
Sample		Countries youth bulge <=30%	Countries youth bulge >30%			
P-value	0	0	0	0	0	0
Number of instrument	1	1	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10%, 5% and 1% level, respectively. TYU is rate of total youth unemployment, Rents is rents from natural resources, TO is trade openness, GDP growth is GDP annual growth, RT is level of democracy, GTE is gross tertiary enrolment, Log T.pop is logarithm of total population and UGR is urban growth rate.

4.10 Empirical Results: The Impact of the Joint Effect of Government Size and other Factors on the Level of Political Instability

Government size can eliminate the adverse impacts of some factors on political environment. Its size can be enlarged to respond to poor economic performance and

imperfections in labor markets that increase unemployment rates. It may play a role in mitigating the impact of a high level of educational attainment on instability by creating public employment to absorb educated youth. It might enlarge to relieve the pressure of rapid urban growth rate that creates a shortage of employment opportunities and public services. Government size shows that it can have a stabilization effect on political environment through mitigating the adverse impact of some determinants of political instability.

4.10.1 The Impact of the Joint Effect between Government Size and Total Youth Unemployment on the Level of Political Instability

Models 7 to 12 in Table 4.3 examine the impact of youth unemployment on political instability moderated by government size.

Model 7 examines the impact of youth unemployment on political instability moderated by government size in panel data. The independent effect of government size has the expected negative sign and significance, suggesting that enlargement of government size lowers political instability. The independent effect of youth unemployment has the expected positive sign and significant coefficient at the 1% level suggesting that increasing youth unemployment enhances political instability. For example, increasing the unemployment rate by a standard deviation in Tunisia deescalates political stability by 0.086 units or 16% of a standard deviation of political instability[287]. The joint effect between total youth unemployment and government size has a positive sign and is significant at the 1% level. Put differently, the interaction effect of unemployment is more important than small government size to destabilize the political environment. For example, the interaction effect of government size on the level of political instability in Egypt at mean rate of unemployment 3.257 is 3.734[288]. Expansion of government size at mean rate of unemployment by a standard deviation enhances political instability by 0.948 units or 127% of one standard deviation of political instability[289]. The interaction effect of unemployment on the level of political instability in Egypt at mean percentage of a government size 2.606% is 4.757[290].

[287] The coefficient of unemployment*(0.129)(St. dev of unemployment in Tunisia)= 0.086 unit or 16% =(0.670*100)/(4.187)(St. dev of political instability in Tunisia).
[288] The coefficient of a government size + [(the coefficient of the joint effect*(3.257) (mean rate of unemployment in Egypt)]=3.734.
[289] It is calculated (3.734)*(0.254)(St. dev of a government size in Egypt)=0.948 unit or 127%= (3.734*100)/(2.939)(St. dev of political instability in Egypt).
[290] The coefficient of unemployment + [(the coefficient of the interaction term*(2.606)(mean percentage of a government size in Egypt)]=4.757.

Increasing unemployment among youth by a standard deviation at mean percentage of government size deescalates stability in Egypt by 0.666 units or 162% of one standard deviation of political instability[291].

The results of the joint effects suggest that the effect of unemployment rate dominates the impact of the joint effect. It might be that absorbing unemployment in the public sector creates public attitudes that prefer public over private employment. This creates educational preferences towards field study that enhances an individual's probability to gain public employment over private (Alesina et al, 2000). As a result, there is continual pressure on government to absorb educated unemployed youth in the public sector (Stevenson, 1992). The failure of government to create public employment to respond to such pressure leads to political instability (Gelb et al., 1991). In some countries like monarchies in the Arabian Peninsula, the majority of employees in the private sector are expatriate workers while indigenous citizens choose voluntarily to be unemployed, waiting for public employment. The public's preference for public employment has been shown in the wake of the so-called Arab spring in late 2010 when some governments in the region created massive public employment in response to public demands for employment opportunities. Many indigenous citizens quit their private posts to seek public employment. This creates difficulty in the private sector over the short-term in dealing with a sudden shortage of human resources in the market (Forstenlechner and Rutledge, 2011)

Models 8 and 9 investigate the impact of the joint effect of government size and youth unemployment on political instability in countries where the percentage of youth bulge is equal to or less than 30% and countries where their percentage is more than 30% respectively. The joint effect has an insignificant negative sign in countries where youth bulge is less than 30%, suggesting the interaction effect of government size is more important than unemployment to destabilize the political environment. In countries where their percentage is more than 30% the joint effect has a positive sign and is insignificant. The results suggest that the interaction effect of unemployment is more important than small government size to destabilize the political environment. Enlargement of government size at mean rate of unemployment produces the opposite effect on political environment in the two sub-samples. In countries where their percentage is less than or equal to 30%, a standard deviation enlargement of

[291] It is calculated (4.757)*(0.14)(St. dev of unemployment in Egypt)=0.666 unit or 162%=(4.757*100)/(2.939)(St. dev of political instability in Egypt).

government size constitutes a reduction in political instability by 0.252 units or 24% of one standard deviation of stability[292]. On the other hand, in countries where their percentage is more than 30%, a standard deviation enlargement of government size at mean rate of unemployment 2.654% enhances instability by 0.886 units or 45% of one standard deviation of instability[293]. The interaction effect of unemployment at mean percentage of government size enhances political instability in both sub-samples; however, its impact is substantially higher in countries where the percentage of youth bulge is more than 30%. One standard deviation increase in unemployment at mean percentage of government size enhances political instability by 2.482 units or 75% of one standard deviation of political instability in countries with more than 30% of youth bulge[294] in comparison with 0.471 units or 25% in countries where their percentage is less than 30%[295].

The relationship between political instability (measured in x-axis) and government size and youth unemployment (measured in y-axis) in countries where their percentage among the population is more than 30% is shown in Figure 4.7. This figure shows that government size and youth unemployment are positively correlated with the level of political instability but that this relationship is not very obvious. Furthermore, while both unemployment and government size continues to grow, the former variable grows more. Alternatively, it might be that in these countries enlargement of government size comes at the expense of its investment in sectors that feed economic growth. As a result, governments continue to act as employer of last resort. However, over the long run this creates difficulty in the creation of more public employment and places governments under financial pressure. Algan et al. (2002) point out that enlargement of government size increases the current expenditure at the expense of

[292]The coefficient of government size + [(the coefficient of the joint effect*(2.719) mean percentage of youth unemployment in countries where the percentage youth bulge less than 30%)]=-0.737. One standard deviation enlargement in government size is (-0.737)(0.342)(St. dev of a government size in these countries)= 0.252 unit or 24%= (0.737*100)/(3.077)(St. dev of political instability in these countries).

[293] The coefficient of government size + [(the coefficient of the joint effect*(2.654) mean percentage of youth unemployment in countries where the percentage youth bulge is more than 30%)]=1.964. One standard deviation expansion in government size is (1.964)(0.451)(St. dev of a government size in these countries)= 0.886 unit or 45%= (1.964*100)/(4.388)(St. dev of political instability in these countries).

[294] The coefficient of unemployment + [(the coefficient of the joint effect*(2.588) mean percentage of government size in countries where the percentage youth bulge more than 30%)]=3.291. One standard deviation increases in unemployment is (3.291)(0.754)(St. dev of unemployment in these countries)= 2.482 unit or 75%= (3.291*100)/(4.388)(St. dev of political instability in these countries).

[295]The coefficient of unemployment + [(the coefficient of the joint effect*(2.789) mean percentage of a government size in countries where the percentage youth bulge less than 30%)]=0.778. One standard deviation increases in unemployment is (0.778)(0.605)(St. dev of unemployment in these countries)= 0.471 unit or 25%= (0.778*100)/(3.077)(St. dev of political instability in these countries).

capital expenditure. The latter expenditure is required to stimulate productivity in the private sector and subsequently create employment opportunities.

In countries where their percentage is less than or equal to 30%, the relationship between political instability (measure in x-axis) and government size and youth unemployment (measured in y-axis) is shown in Figure 4.8. The relationship between the two variables and political instability is not obvious. Given that the average percentage of youth bulge in these countries is 21.5%, enlargement of government size lowers the impact of unemployment among youth and it satisfies needs and requirements of other segments of the population. According to Wagner law, a government enlarges its size to respond to unemployment and needs and requirements produced by the economic situation.

Figure 4.7 Government Size, Youth Unemployment, and Political Instability in Countries with more than 30% of Youth Bulge among Population over the period from 1984-2013

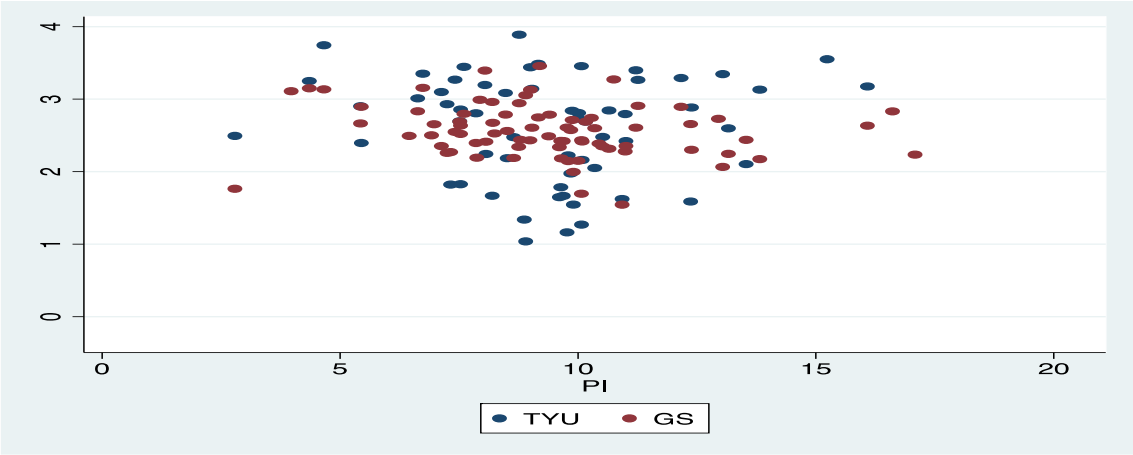
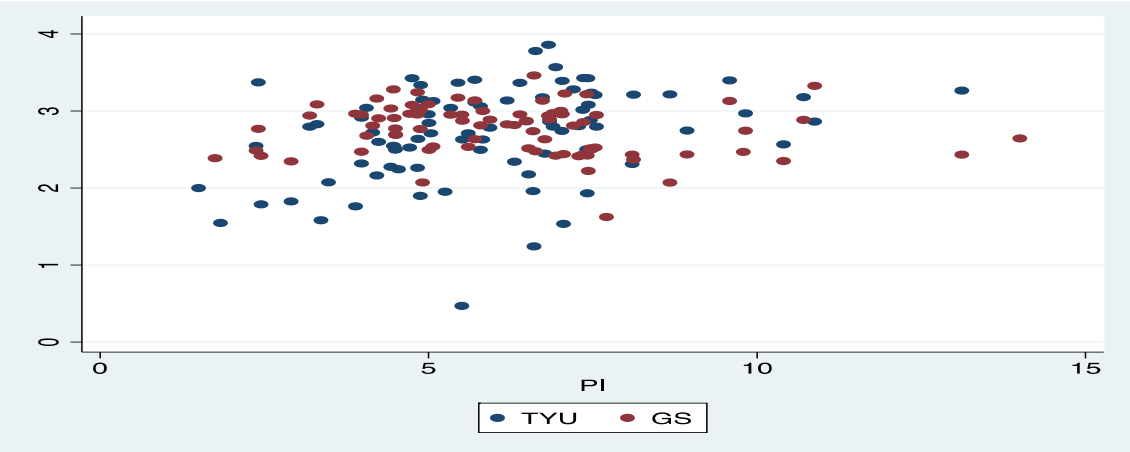


Figure 4.8 Government Size, Youth Unemployment, and Political Instability in Countries with equal to and less than 30% of Youth Bulge among Population over the period from 1984-2013



Model 7 is re-estimated for two sub-samples where the percentage of youth bulge is more than 30%: in the first sub-sample the government size is less than the sample mean of the entire data set and in the second sub-sample its size is more than the sample mean. In the first sub-sample the joint effect has an insignificant negative effect while in the second sub-sample it has an insignificant positive effect[296].

Model 10 examines the impact of the joint effect of government size and youth unemployment on the level of political instability in oil countries[297]. The independent effect of youth unemployment enhances political instability; however, it exposes lower political risk in oil countries, as the interaction term between oil and total youth unemployment is negative although insignificant. Although oil rents offer flexibility to responses to unemployment; unemployment risk continues to exist in oil and non-oil countries. The joint effect between youth unemployment and government size has a positive impact on political environment. However, its impact is lower in oil than non-oil countries as the interaction effect between oil and the joint effect is negative although not significant. In other word, the interaction effect of unemployment is more important than small government size to destabilize the political environment; but, the effect is lower in oil than non-oil countries. The interaction effect of unemployment at mean government size is more risky in non-oil countries than oil countries. A standard deviation increase in youth unemployment increases the risk of political instability in oil

[296] Results not reported.
[297] Continuous proxy of natural resources is replaced by oil dummy.

countries by 1.769 units or 76% of a standard deviation of political instability[298] in comparison with 3.102 units or 123% of one standard deviation of political instability in non-oil countries[299]. Similarly, the adverse impact of enlarging the government size on political environment to absorb unemployment is substantially higher in non-oil than oil countries. Expansion of government size at mean rate of unemployment enhances political instability in oil countries by 0.300 units or 19% of one standard deviation of instability[300] in comparison with 1.275 units or 78% in non-oil countries[301].

The positive association between the joint effect and political instability in oil and non-oil countries goes through different channels; however, it has similar causes, i.e. continuing pressure on governments to create more public employment. In non-oil countries enlargement of government size to absorb youth unemployment might be associated with increasing taxes on productive sectors with adverse impacts on economic growth that filter through several channels. Bergh and Henrekson (2010) point out that under so-called endogenous growth theory, enlargement of government size has an adverse impact on economic growth through increases in taxes and lower levels of investment on the productive sector such as infrastructure. It crowds out private sector investment on physical capital and human resources, which restrains long-term economic growth. In oil countries, oil rents partially reduce the adverse impact of large government size on economic growth; however, its adverse impact still exists. It leads to a low level of economic growth because of the imbalance in growth rate between different forms of distribution and public income which in turn reduces the rate of return to investment (Lane and Tornell, 1996). Large government size is linked

[298] The independent coefficient of youth unemployment + its interaction with oil dummy= 0.150 + [(The coefficient of joint effect between youth unemployment and government size + its interaction with oil dummy =1.092*(2.714) (mean percentage of a government size in oil countries)=3.114. One standard deviation increase (3.114)*(0.568)(St. dev of youth unemployment in oil countries)=1.769 unit or 76% = (3.114*100)/(4.07)(St. dev of political instability in oil countries).

[299]The independent coefficient of youth unemployment + [(The coefficient of joint effect between youth unemployment and government size 1.565*(2.681) (mean percentage of a government size in non-oil countries)=4.932. One standard deviation increase (4.932)*(0.629)(St. dev of youth unemployment in non-oil countries)=3.102 unit or 123% = (4.932*100)/(3.985)(St. dev of political instability in non-oil countries).

[300] The independent coefficient of government size + its interaction with oil dummy= -2.228 +[(The coefficient of joint effect between youth unemployment and government size + its interaction with oil dummy =1.092*(2.729) (mean percentage of youth unemployment in oil countries)= 0.752. One standard deviation expansion in government size (0.752)*(0.396)(St. dev of government size in oil countries)=0.297 unit or 19% = (0.752*100)/(4.07)(St. dev of political instability in oil countries).

[301] The independent coefficient of government size + [(The coefficient of joint effect between youth unemployment and government size (1.565)*(2.744) (mean percentage of youth unemployment in non-oil countries)=3.125. One standard deviation expansion in government size (3.125)*(0.396)(St. dev of government size in non-oil countries)=1.275 unit or 79% = (3.125*100)/(3.985)(St. dev of political instability in non-oil countries).

to poor economic growth in both groups through the human resources channel. It drives human resources away from the private sector and increases their wage levels in a country (Bergh and Henrekson, 2010). In summary, in both groups of countries, enlargement of government size produces further pressure on governments to create more public employment. The adverse impact on economic growth forces a government to continue to act as employer of last resort. The failure to do so enhances instability.

Model 11 examines the impact of the joint effect of youth unemployment and government size on political instability in democratic countries[302]. The independent effect of government size has a negative coefficient suggesting that enlargement of government size lowers the level of political instability. Furthermore, the effect of government size is more effective in lowering political instability in democratic than autocratic countries. The independent effect of youth unemployment enhances political instability; however, it exposes higher political risk in democratic countries, as the interaction coefficient between democracy and total youth unemployment is positive and has a significant coefficient at the 5% level. The joint effect between total youth unemployment and government size has a positive sign and significant coefficient at the 5% level; however, it turns into a negative impact in democratic countries as the interaction term between democracy and the joint effect has a negative sign and is significant at the 5% level. In other words, the interaction effect of unemployment is more important than small government size to destabilize the political environment in autocratic countries; while, it is vice versa in democratic countries. Democratic countries succeed through government size to turn the risk of unemployment on political instability to be almost negligent. Increasing the rate of youth who experience unemployment by a standard deviation at mean size of government enhances political instability by 0.132 units or 8% in democratic countries[303] in comparison with 3.759 units or 117% of one standard deviation of instability in autocratic countries[304]. Similarly, government size addressing unemployment breeds stability in democratic

[302] The proxy of democracy from IV Polity Project is replaced by democratic dummy.

[303] The independent coefficient of youth unemployment + its interaction with democracy dummy= 1.294 + [(the coefficient of joint effect between youth unemployment and government size + its interaction with democracy dummy =-0.38*(2.804) (mean percentage of government size in democratic countries)=0.228. One standard deviation increase (0.228)*(0.579)(St. dev of unemployed youth in democratic countries)=0.132 unit or 8% = (0.228*100)/(2.948)(St. dev of political instability in democratic countries).

[304]The independent coefficient of youth unemployment + [(the coefficient of joint effect between youth unemployment and government size (1.966)*(2.616) (mean percentage of government size in autocratic countries countries)=5.080. One standard deviation increase (5.080)*(0.74)(St. dev of youth unemployment in autocratic countries)=3.759 unit or 117%= (5.080*100)/(4.349)(St. dev of political instability in autocratic countries).

countries whereas it has a destabilization effect in autocratic countries. Enlargement of government size by a standard deviation at mean rate of unemployment enhances stability in democratic countries by 0.777 units or 71% of one standard deviation of instability[305]. In contrast, its enlargement in autocratic countries by a standard deviation deteriorates stability by 1.874 units or 98% of one standard deviation of political instability[306].

In democratic countries the effect of government size dominates the impact of the joint effect on political instability. It might be that in these countries enlargement of government size addresses unemployment and related issues such as income inequality and ethnic fractionalization that contribute to stabilizing the political environment. Grassi (2014) indicates that government in democratic countries tends to enlarge to enhance the level of income equality and improve the living standards of some ethnic groups. In autocratic countries it might be that government size continues to grow yet public employment is available for specific interest groups not the public in general. Weiner (1967) cited by Robinson and Verdier (2002) illustrates unequal access to public employment in India. The author points out that a personal relationship gives an individual access to public employment. This is because not all members of the public possess factors that help them to be part of interest groups. Turner and Young (1985) cited by Robinson and Verdier (2002) indicate that public employment is one form of clientelism and is built based on several factors, such as interest exchange and more importantly and frequently based on kinship and ethnic relationships. Control variables retain their sign and significance except urban growth rate that turns into an insignificant positive sign.

Model 12 examines the impact of the joint effect on political instability in the MENA region. The independent effect of government size has a negative coefficient, suggesting that enlargement of its size lowers the level of political instability. Additionally, the size is more effective in stabilizing the political environment in the

[305]The independent coefficient of government size + its interaction with democracy dummy= -1.06 +[(the coefficient of joint effect between youth unemployment and government size + its interaction with democracy dummy =-0.380*(2.732) (mean percentage of unemployed youth in democratic countries)=-2.098. One standard deviation enlargement of government size (-2.098)*(0.334)(St. dev of a government size in democratic countries)=0.7 or 71% = (-2.098*100)/(2.948)(St. dev of political instability in democratic countries).

[306] The independent coefficient of a government size + [(the coefficient of the joint effect between government size and youth unemployment)*(2.696)(mean percentage of youth unemployment in autocratic countries)]=4.288. One standard deviation enlargement in a government (4.288)*(0.437)(St. dev of a government size in autocratic countries)=1.874 unit or 98%= (4.288*100)/(4.349)(St. dev of political instability in autocratic countries).

MENA region than non-MENA region as the interaction between government size and the MENA dummy is negative although not significant. The independent effect of youth unemployment enhances political instability; however, it constitutes a higher political risk in MENA countries, as the interaction coefficient between MENA and total youth unemployment is positive but insignificant. Moreover, the joint effect between total youth unemployment and government size has a positive sign and its impact is substantially higher in the MENA region. It indicates that the interaction effect of unemployment is more important than small government size to destabilize the political environment and the effect is substantially higher in MENA than non-MENA region. The interaction effect of unemployment on political instability at mean percentage of government size is stronger in the MENA than non-MENA region. Increasing unemployment by one standard deviation at mean percentage of government size enhances political instability in MENA by 7.540 units or 321% of one standard deviation of political instability[307] in comparison with 2.844 units or 111% in non-MENA[308]. The interaction effect of government size enhances political instability in the MENA and non-MENA region. Enlargement of government size by one standard deviation at mean rate of unemployment enhances political instability by 3.435 units or 239% of a standard deviation of political instability in MENA[309] while it enhances instability in non-MENA region by 1.295 units or 79%[310].

A combination of the economic environment and labor market force government in the MENA region to continue to act as employer of last resort. A high level of government involvement in the economic environment leads to a weak private sector. Consequently, government dominates the labor market as the private sector finds it

[307] The independent coefficient of youth unemployment + its interaction with MENA dummy= 1.982 +[(the coefficient of interaction between youth unemployment and government size + its interaction with MENA =4.202*(2.858) (mean percentage of government size in MENA)=13.991. One standard deviation increase (13.991)*(0.539)(St. dev of youth unemployment in MENA countries)=7.541 unit or 320% = (13.991*100)/(4.366)(standard deviation of political instability in MENA countries).

[308] The independent coefficient of youth unemployment + [(the coefficient of joint effect between youth unemployment and a government size*(2.666) (mean percentage of a government size in non-MENA)=4.443. One standard deviation increase (4.443)*(0.640)(St. dev of youth unemployment in non-MENA countries)=2.844 unit or 111% = (4.443*100)/(3.977)(St. dev of political instability in non-MENA countries).

[309] The independent coefficient of a government size + its interaction with MENA dummy= -2.471 +[(the coefficient of interaction between youth unemployment and government size + its interaction with MENA =4.202*(3.703) (mean rate of unemployment in MENA)=10.441. One standard deviation increase (10.441)*(0.329)(St. dev of government size in MENA countries) =3.435 unit or 239% = (10.441*100)/(4.366)(St. dev of political instability in MENA countries).

[310] The independent coefficient of government size + [(the coefficient of interaction between youth unemployment and a government size*(2.7) (mean percentage of unemployment in non-MENA)=3.135. One standard deviation increase (3.135)*(0.413)(St. dev of a government size in non-MENA countries)= 1.295 unit or 79% = (3.135*100)/(3.977)(St. dev of political instability in non-MENA countries).

difficult to offer equivalent wages to the public sector. The wage levels in the public sector in the region are one third higher than their counterparts in the private sector (Schiavo-Campo et al., 1997). High expectations set by the unemployed in terms of working conditions and wage levels (Algan et al., 2002) creates public attitudes that prefer public over private unemployment (Alesina et al., 2000). Pressure is further intensified on government to act as employer of last resort in the absence of, or a weak temporary unemployment benefits system (Alesina et al., 1999). Said (1996) summarizes that a high level of government involvement in the economic environment, labor market, higher wage level in the public sector and absence of temporary unemployment benefits forces governments in the MENA region to act as employer of last resort. Governments in the region can neither ignore unemployment nor can they continue enlarging government size. The latter can lead to political instability through several channels as mentioned earlier. Control variables retain their sign and significance except rents from natural resources that becomes insignificant.

Table 4.3 The Joint Effect between Government Size and Youth Unemployment on the Level of Political Instability over the Period 1984-2013

Independent variables	Dependent variable: Political instability					
	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
TYU	0.670*** (0.201)	1.200*** (0.172)	-0.609 (0.756)	0.737*** (0.209)	-0.061 (0.483)	0.893*** (0.195)
Government Size	-1.372*** (0.493)	-0.327 (0.552)	-2.035 (1.498)	-1.169** (0.508)	-1.012 (0.801)	-0.464 (0.561)
Government size*TYU	1.568*** (0.606)	-0.151 (0.507)	1.507 (1.195)	1.565** (0.613)	1.966** (0.791)	1.333** (0.582)
Oil				-1.383** (0.583)		
Oil*Government size				-1.059 (1.529)		
Oil*TYU				-0.587 (0.565)		
Oil*Government size*TYU				-0.471 (2.215)		
DD					-1.542*** (0.322)	
DD*Government size					-0.048 (0.909)	
DD*TYU					1.355** (0.541)	
DD*Government size*TYU					-2.346** (0.920)	
MENA						-5.421*** (1.592)
MENA*Government size						-2.007 (7.837)
MENA*TYU						1.088 (2.174)
MENA*Government size*TYU						2.869 (12.725)
Constant	7.504*** (1.569)	7.442*** (1.819)	7.264 (6.636)	8.272*** (1.644)	6.741*** (1.228)	10.148*** (1.751)
Adjusted R square	24%	25%	33%	23%	31%	33%
Number of observation	580	484	96	583	589	580
Estimation method	2SLS					
Countries		Countries % of youth bulge <=30%	Countries where % of youth bulge >30%			
P-value	0	0	0	0	0	0
Number of instrument	1	1	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10%, 5% and 1% level, respectively. All models include all control variables included in models in Table 4-2 (results are not reported). For space restriction only the results of variables of interest are reported.

4.10.2 The Impact of the Joint Effect between Government Size and Corruption on the Level of Political Instability

Models 13 to 18 in Table 4.4 examine the impact of the joint effect between government size and corruption on political instability.

Model 13 examines the impact of the joint effects of government size and corruption on the level of political instability in panel data. The independent effect of corruption has a positive and significant coefficient at the 1% level, suggesting that increasing the level of corruption enhances political instability. The independent effect of government size has a negative sign although it is insignificant. The joint effect between corruption and government size has a negative and significant coefficient at the 1% level. It suggests that the interaction effect of government size is more important than the level of corruption to destabilize the political environment. In a country like Syria, the interaction effect of government size on instability at mean score of corruption 3.519 is -3.019[311]. Enlargement of government size by a standard deviation at mean score of corruption lowers instability by 0.713 units or 78% of a standard deviation of political instability[312]. The interaction effect turns the impact of corruption in the joint effect into a negative effect. The interaction effect of corruption at mean percentage of government size 2.665 is -1.217[313]. Decreasing the level of corruption at mean percentage of government size enhances instability by 1.094 units or 28% of one standard deviation of political instability[314].

It might be that a government focuses more on quality of human resources than quantity. Hence, it hires qualified human resources to carry out checks and balances as well as accountability measures so that the level of corruption decreases (Kotera et al., 2012). Alternatively, it might select to hire few employees and provide them with high wage levels so that they do not seek illegal payments (Montinola and Jackman, 2002). In general, control variables retain their sign and significance.

Model 14 examines the impact of the joint effect on political instability in countries where the percentage of youth bulge is equal to or less than 30%. The

[311] The coefficient of government size (-0.553) + [(the coefficient of joint effect (-0.701)*(3.519) (mean score of corruption in Syria)]=-3.019.
[312] The coefficient of government size in joint effect *(0.236)(its standard deviation in Syria)= 0.713 unit, or 78% = (-3.019*100)/(4.388)(St. dev of political instability in Syria).
[313] The coefficient of corruption (0.651) + [(the coefficient of joint effect (-0.701)*(2.665) (mean percentage a government size)]=-1.217.
[314] The coefficient of corruption in the joint effect *(0.899) (its St. dev in Syria) = 1.094 unit, or 8% = (-1.217*100)/ (4.388) (St. dev of political instability in Syria).

independent effect of corruption and government size has a positive sign, suggesting that enlargement of government size and increasing levels of corruption independently enhances political instability. The joint effect between the two variables has a negative coefficient although it is insignificant. It suggests that the interaction effect of government size is more important than the level of corruption to destabilize the political environment. The interaction effect of government size at mean score of corruption 2.433 on political instability is 0.428 (its independent effect is 0.796). Enlargement of government size at mean score of corruption by a standard deviation escalates instability by 0.146 units or 14% of one standard deviation of instability[315]. Similarly, the joint effect reduces the adverse impact of the independent effect of corruption on political instability. A standard deviation increase in the level of corruption at mean percentage of government size enhances political instability by 0.165 units or 4% of one standard deviation of political instability[316].

The empirical results might be explained in light of the level of democracy in these countries. The average score of democracy in the Polity IV project over the sample period is 15 in countries where their percentage less than or equal to 30%. This places government under public scrutiny that makes it difficult to enlarge its size. Such enlargement might constitute an increase in taxes without corresponding improvement in quantity and quality of public goods and services. Similarly, the incumbent might find it difficult to use some form of corruption to satisfy interest groups, which in turn enhances their risk on the political environment. Hence an enlargement of government size to satisfy specific segments of the population or corruption to please specific interest groups might come at the expense of the majority. Under such conditions, reducing corruption and downsizing government might be more rewarded because it increases government popularity among the majority of the population. Fjelde and Hegre (2014) point out that accommodating private interests is less rewarded in democratic countries because political support is gained from the majority.

[315] The coefficient of government size in model 14 +[(the coefficient of the joint effect *(2.433)(mean score of corruption in these group of countries)]=0.428. The coefficient of government size in the joint effect (0.428)*(0.342)(St. Dev. Of government size in these group countries)=0.146 unit or 14%= (0.428*100)/(3.077)(St. Dev. of political instability in these group of countries).

[316] The coefficient of corruption in model 14 + [(the coefficient of the joint effect *(2.789)(mean percentage of a government size in these group of countries)]=0.117. The coefficient of corruption in the joint effect (0.117)*(1.404)(St. Dev. Of corruption in these group countries)=0.165 unit or 4%= (0.117*100)/(3.077)(St. Dev. of political instability in these group of countries).

Model 15 examines the impact of the joint effect on political instability in countries where youth bulge percentage is more than 30%. The independent effect of government size has a negative coefficient although is not significant. Enlargement of government size lowers the risk of political instability. The independent effect of corruption has a negative sign but is not significant. This suggests that a decrease in the level of corruption enhances political instability. Furthermore, the joint effect between the two variables has a negative and significant coefficient at the 5% level. It suggests that the interaction effect of government size is more important than the level of corruption to destabilize the political environment. The interaction effect of government size at mean score of corruption on instability is -7.352. Enlargement of the size of government by a standard deviation lowers instability by 3.315 units or 168% of one standard deviation of instability[317]. The interaction effect of corruption at mean percentage of government size 2.588% on political instability is -5.747. Corruption enhances instability by 5.737 units or 125% of one standard deviation of political instability when its level decreases by one standard deviation[318]. It might be that these countries have limited financial resources so that they can neither enlarge the government size to satisfy the public nor offer rent seeking opportunities for interest groups. De Mesquita and Smith (2009) point out that a high level of corruption reduces the political risk of interest groups whereas different forms of government expenditure like public employment negates the political risk initiated from mass anti-government movements.

Model 16 examines the impact of the joint effects between government size and corruption on political instability in oil countries. The independent effect of government size has a negative coefficient and is significant at the 5% level suggesting that the enlargement of government size lowers the level of political instability. Furthermore, its impact is more effective in lowering political instability in oil than non-oil countries as the interaction term between oil and government size has a negative sign although it is not significant. The independent effect of corruption enhances political instability; however, it exposes lower political risk in oil countries, as the interaction coefficient

[317] The coefficient of government size in Model 15 + [(the coefficient of the joint effect *(3.754)(mean score of corruption in these group of countries)]=-7.532. The coefficient of government size in the joint effect (-7.532)*(0.451)(St. Dev of government size in these group countries)=3.315 unit or 168%= (7.532*100)/(4.388)(St. Dev. of political instability in these group of countries).

[318] The coefficient of corruption in Model 15 + [(the coefficient of the joint effect *(2.588)(mean percentage of a government size in these group of countries)]=-5.474. The coefficient of corruption in the joint effect (-5.474)*(1.048)(St. Dev. of corruption in these group countries)=5.747 unit or 125%= (5.474*100)/(4.388)(St. Dev. of political instability in these group of countries).

between oil and corruption is negative and significant at the 5% level. Corruption in oil countries satisfies the greed of some groups for oil rents so that their political risk reduces. The joint effect between corruption and government size has a negative sign and significant coefficient at the 1% level; however, it has a positive impact on oil countries as the interaction term between the joint effects and oil countries has a positive sign although it is insignificant. It suggests that the interaction effect of government size is more important than the level of corruption to destabilize the political environment in non-oil countries; while, it is vice versa in oil countries. The interaction effect of government size on political instability in oil countries at mean score of corruption 3.627 is 2.88[319]. Enlargement of government size by a standard deviation at mean score of corruption enhances political instability in oil countries by 1.417 units or 71% of a standard deviation of political instability[320]; in contrast, reducing its size by a standard deviation at mean score of corruption increases instability in non-oil countries by 0.927 units or 57% of one standard deviation of instability[321]. The interaction effect of corruption at mean percentage of government size 2.714 on instability in oil countries is 3.594[322]. One standard deviation increase in corruption at mean percentage of government size escalates instability by 3.820 units or 88% of one standard deviation of political instability[323] while one standard deviation decrease in corruption at mean percentage of a government size enhances instability by 1.565 units or 29% of one standard deviation of political instability in non-oil countries[324].

In oil countries, large government size enhances the impact of corruption on political instability. These countries tend to stabilize the political environment through high levels of corruption to satisfy interest groups (Smith, 2004) and public employment

[319] (The independent effect of government size + its coefficient in interaction with Oil dummy=-2.537)+ [(the coefficient of joint effect of government size and corruption + its coefficient in the interaction term with oil dummy=1.439*(3.627) (mean score of corruption in oil countries)]=2.088.

[320] The coefficient of government size in the joint effect (2.088)*(0.396)(St. dev of government size in oil countries)=1.417 unit or 71% = (2.088*100)/(4.072)(St.d ev of political instability in oil countries).

[321] (The independent effect of government size + [(the coefficient of joint effect between a government size and corruption=-0.697*(2.939) (mean score of corruption in non oil countries)=-2.271. The coefficient of government size in the joint effect (-2.271)*(0.413)(St. dev of a government size in non-oil countries)=0. 927 unit or 57% =(-2.271*100)/(3.985)(St. dev of political instability in non-oil countries).

[322] (The independent effect of corruption + its coefficient in interaction with Oil dummy=-0.462)+ (the coefficient of joint effect between government size and corruption + its coefficient in the interaction term with oil dummy=1.493*(2.714) (mean score of a government size in oil countries)=3.594.

[323] The coefficient of corruption in the joint effect (3.594)*(1.062)(St. dev of corruption in oil countries)=3.82 unit Or 88%= (3.594*100)/(4.072)(St. dev of political instability in oil countries).

[324] (The independent effect of corruption + [(the coefficient of joint effect between government size and corruption=-0.696*(2.939) (mean score of corruption in non oil countries)=-1.155. The coefficient of corruption in the joint effect (-1.155)*(0.413)(St. dev of a government size in non-oil countries)=1.565 unit or 29% =(-1.155*100)/(3.985)(St. dev of political instability in non-oil countries).

to satisfy the general public. However, over the long run they consume a substantial amount of public resources with adverse impacts on economic growth. The imbalance in growth rate between different forms of distribution and public income reduces the rate of return to investment (Lane and Tornell, 1996). Alternatively, the imbalance increases instability through a high level of competition on public resources across different segments of the population. In non-oil countries, reducing government size lowers the impact of corruption on political environment. The level of democracy in non-oil countries is high in comparison to oil countries (their average score in the Polity IV project is 14 vs. 7 in oil countries). In these countries the incumbent evaluates the potential returns from lowering the prospective risks of the public and interest groups. It might find that reducing government size may bring the level of corruption down and thus enhance its chance to be reelected (rather than the opposite holding true).

The impact of the joint effect between government size and corruption on political instability in democratic countries is examined in Model 17. Enlargement of government size is more effective in enhancing political stability in democratic than autocratic countries. The independent effect of corruption enhances political instability; however, it exposes higher political risk in democratic countries, as the interaction term between democracy and corruption is positive and significant at the 5% level. Corruption occurs in democratic countries; however, when it is caught it has a stronger impact on political environment than autocratic countries. The joint effect between corruption and government size has a negative sign; however, its impact is lower in democratic countries as the interaction term between democracy and the joint effect has a positive sign and significant coefficient at the 5% level. The results suggest that in both groups of countries the interaction effect of government size is more important than the level of corruption to destabilize the political environment; but, the effect is lower in democratic than autocratic countries. In democratic countries the interaction effect of government size at mean score of corruption 2.227 is -0.551[325]. Enlargement of government size by a standard deviation at mean score of corruption decreases the risk of political instability by 0.184 units or 19% of one standard deviation of political instability[326]. The interaction effect of corruption on political instability in democratic

[325](The independent coefficient of government size + its interaction with the dummy of democracy=-0.025) + [(the coefficient of corruption and government size + its interaction with democracy dummy=(-0.236)*(2.227)(mean score of corruption in democratic countries)=-0.551.

[326] The coefficient of government size in the joint effect (-0.551)*(0.334)(St. dev of government size in democratic countries)=0.184 unit or 19%=(-0.551*100)/(2.948)(St. dev of political instability in democratic countries).

countries at mean percentage of government size 2.804 is -0.212[327]. Decreasing corruption by a standard deviation enhances instability by 0.290 units or 7% of one standard deviation of political instability[328]. The joint effect suggests that a smaller government size reduces the impact of corruption on political instability in democratic countries. In these countries a reduction in government size and low level of corruption might constitute tax cuts that would satisfy the majority of the public.

The impact of the joint effects between corruption and a government size on political instability in the MENA region is examined in Model 18. The independent effect of government size has a positive sign; however, its impact is stronger in the MENA region as the interaction between the MENA dummy and government size has a positive sign although it is not significant. This suggests that enlargement of government size enhances political instability. The independent effect of corruption enhances political instability; but it exposes lower risk on political environment in the MENA than non-MENA region. The joint effect between corruption and government size has a negative sign and the effect is higher in MENA region as the interaction term between MENA and the joint effect has a negative sign and is significant at the 10% level. The results point out that the interaction effect of government size is more important than corruption to destabilize the political environment and such importance is higher in MENA than non-MENA region. The interaction effect of government size on political instability in MENA at mean score of corruption 3.509 is -18.762[329]. Reducing government size by a standard deviation enhances instability in the region by 6.179 units or 430% of one standard deviation of political instability[330] in comparison with 0.721 unit or 44% of one standard deviation in non-MENA region[331]. The interaction effect of corruption on instability in the MENA region at mean percentage of

[327] (The independent coefficient of corruption + its interaction with the dummy of democracy=0.450) + [(the coefficient of corruption and a government size+ its interaction with democracy dummy=(-0.236)*(2.804)(mean percentage of a government size in democratic countries)=-0.212.

[328] The coefficient of corruption in the joint effect (0.212)*(1.368)(St. dev of corruption in democratic countries)=0.290 unit or 7%=(-0.212*100)/(2.948)(St.dev of political instability in democratic countries).

[329] (The independent coefficient of government size + its interaction with the dummy of MENA=3.981) + [(the coefficient of corruption and government size + its interaction with MENA dummy=(-6.481)*(3.509)(mean score of corruption in MENA)=-18.762.

[330] The coefficient of government size in the joint effect (-18.762)*(0.329)(St. dev of government size in MENA)=6.179 unit or 430%=(18.762*100)/(4.366)(St. dev of political instability in MENA).

[331] (The independent coefficient of government size + [(the coefficient of corruption and government size(-0.716)*(2.949)(mean score of corruption in non-MENA countries)=-1.748. One standard deviation enlargement is calculated (-1.748)*(0.412)(St. dev of a government size in non-MENA countries)= 0.721 unit or 44%= (1.748*100)/(3.977)(St. dev of political instability in non-MENA).

a government size 2.858% is -20.394[332]. One standard deviation decrease in corruption at mean percentage of government size increases instability in the MENA region by 16 units or 467% of one standard deviation of instability[333] while each one standard deviation reduction in corruption in non-MENA enhances instability by 1.569 units or 29% one standard deviation of instability[334].

Reducing government size reduces the impact of corruption on political instability in the MENA region and its impact is substantially high. This reduces the adverse impacts of corruption on the ability of labour market's to create employment opportunities. By doing so, it eliminates political risk of mass anti-government movements (De Mesquita and Smith, 2009). The failure of government to reduce its size to mitigate the adverse impacts of a high level of corruption on public living standards leads to instability. Hollander and Byun (2012) point out that it leads to instability when an important segment of population like youth bulge believe the corrupted government fails to address their economic and political exclusiveness. In other words, the level of corruption in the MENA region is comparable to the level in non-MENA region; however, it might have a stronger impact on public living standards. Hence, a government downsizes it is size to mitigate its impact on public living standards. Control variables have the expected significant sign except urban growth rate and trade openness.

[332] (The independent coefficient of corruption + its interaction with the dummy of MENA=-1.867) + [(the coefficient of corruption and government size+ its interaction with MENA dummy=(-6.481)*(2.858)(mean percentage of a government size in MENA)=-20.392.

[333]The coefficient of corruption in the joint effect (-20.392)*(0.782)(St. dev of corruption in MENA)=16 unit or 467%=(-20.392*100)/(4.366)(St.dev of political instability in MENA).

[334] (The independent coefficient of corruption + [(the coefficient of corruption and government size (-.716)*(2.666)(mean percentage of government size in non-MENA countries)=-1.136. One standard deviation decrease is calculated (-1.136)*(1.405)(St. dev of corruption in non-MENA countries)= 1.596 unit or 29%= (1.136*100)/(3.977)(St .dev of political instability in non-MENA).

Table 4.4 The Joint Effect between Government Size and Corruption on the Level of Political Instability over the Period 1984-2013

Independent variables	Dependent variable: Political instability					
	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18
Government Size	-0.553 (0.653)	0.796 (0.831)	-0.558 (1.263)	-0.221 (0.686)	0.224 (1.194)	0.364 (0.804)
Corruption	0.651*** (0.125)	0.539*** (0.123)	-0.555 (0.542)	0.713*** (0.126)	-0.533 (0.408)	0.774*** (0.136)
Corr*Government size	-0.701*** (0.248)	-0.151 (0.224)	-1.901** (0.767)	-0.697*** (0.258)	-2.103*** (0.735)	-0.716*** (0.265)
Oil				-0.575 (0.484)		
Oil*Government size				-2.315 (2.193)		
Oil*Corr				-1.175** (0.514)		
Oil*Corr*Government size				2.190 (1.680)		
DD					-1.694*** (0.435)	
DD*Government size					-0.250 (1.485)	
DD*Corr					0.984** (0.420)	
DD*Government size*Corr					1.867** (0.796)	
MENA						-2.044 (1.525)
MENA*Government size						3.616 (3.714)
MENA*Corr						-2.641** (1.192)
MENA*Corr*Government size						-5.764* (3.347)
Constant	4.383*** (1.228)	2.538** (1.177)	10.166** (4.264)	4.195*** (1.271)	5.526*** (1.279)	3.252*** (1.177)
Adjusted R square	25%	26%	33%	26%	30%	33%
Number of observation	589	493	96	592	589	589
Estimation method	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS
P-value	0	0	0	0	0	0
Number of instrument	1	1	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10%, 5% and 1% level, respectively. All models include all control variables, included in models in Table 4-2 (results are not reported). For space restriction only the results of variables of interest are reported.

4.10.3 The Impact of the Joint Effect between Government Size and Gross Tertiary Enrolment on the Level of Political Instability

Models 19 to 24 in Table 4.5 examine the impact of the joint effect between government size and gross tertiary enrolment on political instability.

In Model 19 the impact of the joint effect on political instability is tested in panel data set. The independent effect of government size has a negative sign and is significant at the 1% level. The independent effect of gross tertiary enrolment has a negative and significant coefficient at the 1% level. This suggests that decreasing the level of gross tertiary enrolment enhances political instability. The joint effect has a positive sign and is significant at the 1% level. It suggests that the interaction effect of gross tertiary enrolment is more important than the government size to destabilize the political environment. The interaction effect of government size on the level of political instability in Angola at mean percentage of gross tertiary enrolment 1.825% is -2.385[335]. Reducing government size at mean percentage of gross tertiary enrolment enhances instability in Angola by 0.925 units or 52% of a standard deviation of political instability[336]. The interaction effect of gross tertiary enrolment on the level of political instability at mean percentage of government size 3.243% is 0.218[337]. One standard deviation increase in gross tertiary enrolment at mean percentage of government size increases the risk of political instability by 0.437 units or 5% of one standard deviation of political instability[338]. Increasing the number of educated youth that exceeds economic size or growth rate forces government to create public employment. As government size and educated youth continue to grow, it experiences pressure from wage bills while the number of educated youth who experience unemployment accumulates. In other words, a combination of the negative consequences of a bloated government sector and a large number of educated youth enhances political instability.

Models 20 and 21 examine the impact of the joint effect on political instability in countries where the percentage of youth bulge is equal to or less than 30% and in countries where their percentage is more than 30% respectively. In both groups, the

[335] The independent effect of government size + [(coefficient of the joint effect*(1.825)(mean percentage of gross tertiary enrollment in Angola)]=-2.385.
[336] The coefficient of government size in the joint effect (2.385)*(0.388)(St. dev of a government size in Angola)=0.925 unit or 52% =(2.385*100)/(4.632)(St. dev of political instability in Angola).
[337] The independent effect of gross tertiary enrollment +[(coefficient of the joint effect*(3.243)(mean percentage of a government size)]=0.218.
[338] The coefficient of gross tertiary enrolment in the joint effect (0.218)*(2)(St. dev of gross tertiary enrollment in Angola)=0.437 unit or 5% =(0.218*100)/(4.632)(St. dev of political instability in Angola).

independent effect of government size and gross tertiary enrolment has a negative sign. However, the joint effect produces different impacts on political instability across the two groups. It has a positive sign and significant coefficient at the 5% level in countries where their percentage is less than or equal to 30%, indicating that the interaction effect of gross tertiary enrolment is more important than the government size to destabilize the political environment. On the other hand, it has a negative sign although it is insignificant in countries where their percentage is more than 30 suggesting that the interaction effect of the government size is more important than gross tertiary enrolment to destabilize the political environment. In countries where the percentage of youth bulges is less than or equal to 30%, enlargement of government size by a standard deviation at mean percentage of gross tertiary enrolment enhances instability by 0.289 units or 28% of one standard deviation of political instability[339]. In contrast, the interaction effect of government size has a negative relationship with political instability in countries where their percentage is more than 30%. Enlargement of government size at mean percentage of gross tertiary enrolment lowers instability by 1.274 units or 64% of one standard deviation of instability[340]. Similarly, the interaction effect of education has the opposite impact on instability at mean percentage of government size across the two groups. Each one standard deviation improvement in the level of educational attainment enhances instability by 2.226 units or 3% of one standard deviation of instability in countries where their percentage is less than or equal to 30%[341] while in countries where their percentage is more than 30% each one standard deviation decrease in gross tertiary enrolment enhances instability by 0.501 units or 1% of one standard deviation of instability[342].

[339] The independent effect of government size in model 20 + [(the coefficient of joint effect between gross tertiary enrolment and a government size*(38.655)(mean percentage of gross tertiary enrolment in countries where the percentage of youth bulge less than 30%)=0.846. The coefficient of government size in the joint effect (0.846)*(0.346)(St. dev of government size in these countries)=0.289 unit or 28%=(0.846*100)/(3.077)(St. dev of political instability these countries).

[340] The independent effect of government size in model 21 + [(the coefficient of joint effect between gross tertiary enrolment and a government size*(9.974)(mean percentage of gross tertiary enrolment in countries where the percentage of youth bulge more than 30%)=-2.824. The coefficient of government size in the joint effect (2.824)*(0.451)(St. dev of government size in these countries)=1.274 unit or 64%=(2.824*100)/(4.388)(St. dev of political instability these countries).

[341] The independent effect of gross tertiary enrolment in model 20 + [(the coefficient of joint effect between gross tertiary enrolment and government size*(2.789)(mean percentage of a government size in countries where the percentage of youth bulge less than 30%)=0.103. The coefficient of a gross tertiary enrolment in the joint effect (0.103)*(21.659)(St. dev of gross tertiary enrolment in these countries)=2.226 unit or 3%=(0.103*100)/(3.077)(St. dev of political instability these countries).

[342] The independent effect of gross tertiary enrolment in model 21 + [(the coefficient of joint effect between gross tertiary enrolment and a government size*(2.588)(mean percentage of government size in countries where the percentage of youth bulge more than 30%)=-0.048. The coefficient of gross tertiary

The positive joint effect in countries where their percentage is less than or equal to 30% might be due to the fact that these countries achieve a high level of gross tertiary enrolment (the average enrolment over the sample period is 39%). This percentage is higher than the actual needs of the economy size so that government enlarges its size to deal with the risk of educated youth on the political environment; otherwise, instability is enhanced. Alternatively, it might be that there is a significant change in economic structure so that the skills attained from the educational system are no longer required by the productive sector. Under both scenarios government size reaches alarming levels while the number of educated youth continues to accumulate. The negative joint effect in countries where their percentage is more than 30% is attributed to the fact that enlargement in government size can lower the adverse impact of low gross tertiary enrolment, especially because its average percentage over the sample period is low (around 9% in this group of countries).

Model 22 examines the impact of the joint effect between government size and gross tertiary enrolment on political instability in oil countries. Enlargement of government size lowers political instability and its stabilization effect is higher in oil than non-oil countries. The independent effect of gross tertiary enrolment has a negative sign and is significant at the 1% level; however, it has a positive impact on political instability in oil countries as the interaction term between oil and gross tertiary enrolment has a positive sign although it is not significant. The joint effect between gross tertiary enrolment and government size has a positive sign and is significant at the 1% level; however, it has a negative impact in oil countries as the interaction term between oil and the joint effect has a negative sign but is insignificant. In other words, in non-oil countries the interaction effect of gross tertiary enrolment is more important than government size to destabilize the political environment; while, it is vice versa in oil countries. The interaction effect of government size on the level of political instability in oil countries at mean percentage of gross tertiary enrolment 22.215% is -3.516[343]. Enlargement of government size by a standard deviation at mean percentage of gross tertiary enrolment lowers the risk of political instability in oil countries by 1.393 units or 86% of a standard deviation of political instability[344]; in contrast, enlargement

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enrolment in the joint effect (-0.048)*(10.424)(St. dev of a gross tertiary enrolment in these countries)=0.502 unit or 1%=(0.048*100)/(4.388)(St. dev of political instability these countries).

[343](The independent effect of government size + its interaction with oil dummy=-2.583)+ (coefficient of joint effect between government size and gross tertiary enrolment + its coefficient in interaction term with oil dummy= (-0.041)*(22.515)(mean percentage of gross tertiary enrolment in oil countries)= -3.516.

[344] The coefficient of government size in the joint effect (-3.516)*(0.396)(St. dev of a government size in oil countries)=1.393 or 86%= (3.516*100)/(4.071)(St. dev of political instability in oil countries).

of government size by one standard deviation at mean percentage of gross tertiary enrolment enhances instability in non-oil countries by 0.073 units or 5% of one standard deviation in political instability[345]. The interaction effect of gross tertiary enrolment at mean percentage of government size 2.714% on the level of political instability in oil countries is -0.060[346]. One standard deviation decrease in gross tertiary enrolment at mean percentage of government size increases the risk of political instability in oil countries by 1.137 units or 1.5% of one standard deviation of political instability[347]. The interaction effect of gross tertiary enrolment on instability in non-oil countries at mean percentage of government size 2.681% is 0.174[348]. One standard deviation increase in gross tertiary enrolment at mean percentage of government size increases instability by 4.384 units or 5% of one standard deviation of political instability[349].

Rentier state theory suggests that oil countries stabilize their political environment through different forms of distribution of expenditure, including expenditure on education (Sandbakken, 2006). This produces a high number of educated youth that exceeds the requirements of the economy. This condition worsens with a lack of diversification in economic activities because of heavy reliance on oil sectors as a result of the Dutch Disease effect. Governments respond by enlarging their size to lower the political risk of educated youth. Absorbing educated youth in the public sector abolishes the opportunities available to some interest groups to organize them to act against a government. Smith (2004) points out that the risk of political instability resulting from greed for oil rents is reduced by creating public employment.

The joint effect has a positive sign in non-oil countries. A positive response of government to absorb educated youth within the public sector leads to political instability through different channels. It increases the level of current expenditure at the

[345] The independent effect of government size + [(coefficient of joint effect between a government size and gross tertiary enrolment*(27.798)(mean percentage of gross tertiary enrolment in non oil countries)=0. 180. The coefficient of government size in the joint effect (0.180)*(0.408)(St. dev of a government size in non-oil countries)=0.073 unit or 5%=(0.180*100)/(3.985)(St. dev of political instability in non-oil countries).

[346] (The independent effect of gross tertiary enrolment + its interaction with oil dummy=0.051)+ (coefficient of joint effect between government size and gross tertiary enrolment + its coefficient in interaction term with oil dummy= -0.041)*(2.714)(mean percentage of a government size in oil countries)= -0.060.

[347] The coefficient of gross tertiary in the joint effect *(18.757)(St. dev of gross tertiary enrolment in oil countries)=1.137 unit or 1.5%=(0.060*100)/(4.072)(St. dev of political instability in oil countries).

[348]The independent effect of gross tertiary enrolment + [(coefficient of interaction between government size and gross tertiary enrolment*(2.680)(mean percentage of government size in non oil countries)= 0.179.

[349] The coefficient of gross tertiary enrolment in the joint effect*(24.261)(St. dev of gross tertiary enrolment in non oil countries)=4.384 unit or 5%=(0.174*100)/(4.072)(St. dev of political instability in non oil countries).

expense of capital expenditure required to stimulate productivity in the private sector (Algan et al., 2002). This hurts the private sector's ability to create employment opportunities and pay taxes and consequently government ability to continue enlarging its size. It also has an adverse impact on the available pool of skills in a country. Educational attitudes are oriented towards field of study that are required by government sectors, not private sectors (Alesina et al., 2000). This creates pressure on educational institutions because the public believes that public employment is guaranteed; consequently, pressure intensifies for government to create more public employment opportunities (Stevenson, 1992). These factors raise significant difficulties for a government over the long run to continue acting as employer of last resort and damage the productive sector's ability to create employment opportunities. Control variables have a significant expected sign.

The impact of the joint effect between government size and gross tertiary enrolment on political instability in democratic countries is examined in Model 23. The independent effect of government size has a negative sign although it is not significant. The independent effect of gross tertiary enrolment has a negative sign and significant coefficient at the 1% level; however, it has a lower impact on political instability in democratic countries as the interaction term between democracy and gross tertiary enrolment has a positive sign and significant coefficient at the 10% level. Democratic practices in democratic countries lower the adverse impact of a low level of gross tertiary enrolment on political environment. These practices offer political channels to educated and uneducated youth to evaluate government performance and discipline politician wrongdoing or underperformance. The joint effect between gross tertiary education and government size has a positive sign; however, it exposes a higher risk on political environment in democratic than autocratic countries. Put it differently, the interaction effect of gross tertiary enrolment is more important than the government size to destabilize the political environment and the effect is higher in democratic than autocratic countries. The interaction effect of government size at mean percentage of gross tertiary enrolment has a different impact on instability between democratic and autocratic countries. In democratic countries, expansion of government size by a standard deviation at mean percentage of gross tertiary enrolment enhances instability by 0.206 units or 21% of one standard deviation of political instability[350] whereas

[350] (The independent effect of government size + its interaction with democracy dummy=-2.618)+ (the coefficient of the joint effect between government size and gross tertiary enrolment+ its coefficient in interaction term with democracy dummy= (0.080)*(40.0149)(mean percentage of gross tertiary enrolment

reducing government size in autocratic countries by one standard deviation enhances instability by 0.086 units or 5% of one standard deviation of instability[351]. Educational attainment enhances instability at mean percentage of government size in democratic and autocratic countries. Increasing the percentage of gross tertiary enrolment by a standard deviation at mean percentage of government size enhances instability by 4.442 units or 6% of one standard deviation of political instability in democratic countries[352] and by 1.443 units or 2% in autocratic countries[353].

The interaction effect of gross tertiary enrolment is more important to political stability than a government size in democratic and autocratic countries. The difference in the percentage of youth bulge between the two groups produces different scenarios[354]. In democratic countries, it might be that their percentage is insufficient to satisfy human resource needs of the public and private sectors. This increases competition between the two sectors on human resources; consequently, it drives their wage level up. The profit consideration that drives the private sector leads them to consider youth bulge recruitment infeasible. This damages the ability of the private sector to generate profits and pay taxes, which in turn decreases the level of public revenue. For example, a shortage in labour supply had an adverse impact on 2015 economic growth in Germany. The shortage hampered economic growth, increased the wage level, and prevented establishment of new business (Gordon, 2014). Such shortages might force some domestic businesses to move their operations to countries where there are abundant human resources with low wage levels. In autocratic countries, it might be that government size is incapable of keeping pace with the growing number of educated

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in democratic countries)= 0.617. The coefficient of government size in the joint effect (0.617)*(0.334)(St. dev of a government size in democratic countries)= 0.206 unit or 21%=(0.617*100)/(2.948)(St. dev of political instability in democratic countries).

[351] The independent coefficient of government size +[(The coefficient of joint effect between government size and gross tertiary enrolment*(15.876)(mean percentage of gross tertiary enrolment in autocratic countries)=-0.197. The coefficient of a government size in the joint effect (0.197)*(0.437)(St. dev of a government size in autocratic countries)=0.086 unit or 5% =(0.197*100)/(4.349)(St. dev of political instability in autocratic countries).

[352] (The independent coefficient of gross tertiary enrolment + its interaction with democracy dummy)=-0.040)+ (the coefficient of joint effect between government size and gross tertiary enrolment+ its coefficient in interaction term with democracy dummy= (0.080)*(2.804)(mean percentage of government size in democratic countries)= 0.186. The coefficient of gross tertiary enrolment in the joint effect (0.186)*(23.825)(St. dev of gross tertiary enrolment in democratic countries)=4.443 unit or 6% =(0.186*100)/(2.948)(St. dev of political instability in democratic countries).

[353] The coefficient of the independent effect of gross tertiary enrolment + the coefficient of joint effect between government size and gross tertiary enrolment*(2.615)(mean percentage of government size in autocratic countries)=0.088. The coefficient of gross tertiary enrolment in the joint effect* (0.080)*(16.313)(St. dev of gross tertiary enrolment in autocratic countries)=1.443 unit or 2%=(0.080*100)/(4.349)(St. dev of political instability in autocratic countries).

[354] The average percentage of youth bulge over the sample period in democratic countries is 23% vs. 32% in autocratic countries.

youth, which enhances instability. Control variables have a significant sign except urban growth rate.

Model 24 examines the impact of the joint effect between government size and gross tertiary enrolment on political instability in the MENA region. The independent effect of government size has a positive impact on political instability in the MENA region, as its interaction term has a positive sign although it is insignificant. The independent effect of gross tertiary enrolment has a negative sign and significant coefficient at the 1% level; however, it turns into a positive impact in the MENA region as the interaction term between MENA and gross tertiary enrolment has a positive sign although it is not significant. Put differently, the MENA region faces higher a political risk from an increasing number of educated youth than non-MENA region. The joint effect between gross tertiary enrolment and government size has a positive sign and significant coefficient at the 1% level; however, it turns into a negative impact in the MENA region as the interaction term between MENA and the joint effect has a negative sign but is not significant. In other word, in MENA region the interaction effect of the government size is more important than gross tertiary enrolment to destabilize the political environment; while it is vice versa in non-MENA region. The interaction effect of government size on instability at mean percentage of gross tertiary enrolment in the MENA region is -0.840. Enlarging government size by a standard deviation at mean percentage of gross tertiary enrolment lowers instability in the region by 0.276 units or 19% of one standard deviation of instability[355]; in contrast, enlargement of government size by one standard deviation at mean percentage of gross tertiary enrolment enhances instability in non-MENA region by 0.239 units or 15% of one standard deviation of instability[356]. The interaction effect of education on instability at mean percentage of government size is different in the MENA than non-MENA region. Reduction in gross tertiary enrolment by one standard deviation at mean percentage of government size enhances instability in the MENA region by 1.636 units or 3% of one standard deviation

[355] (The independent effect of government size + its interaction with MENA dummy=0.103)+ (the coefficient of the joint effect between government size and gross tertiary enrolment+ its coefficient in interaction term with MENA dummy=-0.049)*(19.204)(mean percentage of gross tertiary enrolment in MENA countries)=-0.840. The coefficient of government size in the joint effect (0.840)*(0.329)(St. dev of a government size in MENA countries)= 0.276 unit or 19%=(0.840*100)/(4.366)(St. dev of political instability in MENA countries).

[356] The independent effect of a government size + [(coefficient of joint effect between a government size and gross tertiary enrolment*(27.743)(mean percentage of gross tertiary enrolment in non MENA countries)=0.580. The coefficient of government size in the joint effect (0.580)*(0.413)(St. dev of a government size in non-MENA countries)=0.239 unit or 15%=(0.580*100)/(3.977)(St. dev of political instability in non-MENA countries).

of instability[357]; while an increase in its level by one standard deviation in non-MENA enhances instability by 3.808 units or 4% of one standard deviation of instability[358].

Governments in the MENA region lower the political risk of an increasing number of educated youth by enlarging the government size. Governments are forced to do so because of mismatch between skills gained from the educational system and those required by labour markets. Huntington (1968) points out that mismatch between skills gained from education and those required by labour markets enhances instability. Some countries in the region, like Egypt, tends to absorb educated youth in the public sector (Gelb et al., 1991 and Urdal, 2006). However, this creates an educational attitude among the public towards areas of study that guarantee public employment. This creates extra pressure on government to create more public employment opportunities. Pissarides and Véganzonès-Varoudakis (2006) point out that the attitude in these countries increases pressure on educational instituations in the MENA region, which in turn increases the number of youth who are queuing for employment in public sectors in the region. While such public policy pays off over the medium-term, it increases the risk of political instability over the long-term both directly and indirectly as the independent effect of government size and education has a positive sign. Directly, the failure of growth rate in government size to match the growth rate of educated youth enhances political instability. It has an adverse impact on political environment through increasing the level of corruption. This is because public employment in such conditions is driven by political, nepotism and patronage considerations rather than merit-based criteria. Poor bureacratic quality and lack of skills required by the private sector increases demand on some public posts because they offer abundant rent seeking opportunities (Tanzi, 1998).

[357] (The independent effect of gross tertiary enrolment + its interaction with MENA dummy=0.003)+ (the coefficient of the joint effect between government size and gross tertiary enrolment+ its coefficient in interaction term with MENA dummy=(-0.049)*(2.858)(mean percentage of government size in MENA countries)=-0.138. The coefficient of gross tertiary enrolment in the joint effect (0.138)*(12.199)(St. dev of a gross tertiary enrolment in MENA countries)= 1.683 unit or 3%=(0.138*100)/(4.366)(St. dev of political instability in MENA countries).

[358]The coefficient of the independent effect of gross tertiary enrolment+ the coefficient of joint effect between government size and gross tertiary enrolment*(2.666)(mean percentage of government size in non-MENA countries)=0.157. The coefficient of gross tertiary enrolment in the joint effect* (0.157)*(24.617)(St. dev of gross tertiary enrolment in non-MENA countries)=3.808 unit or 4%=(0.157*100)/(3.977)(St. dev of political instability in non-MENA countries).

Table 4.5 The Joint Effect between Government Size and Gross Tertiary Enrolment on the Level of Political Instability over the Period 1984-2013

Independent variables	Dependent variable: Political instability					
	Model 19	Model 20	Model 21	Model 22	Model 23	Model 24
Government Size	-2.541*** (0.562)	-1.202* (0.693)	-2.817** (1.382)	-2.312*** (0.588)	-1.291 (0.869)	-1.625*** (0.602)
GTE	-0.057*** (0.008)	-0.045*** (0.008)	-0.046 (0.042)	-0.061*** (0.008)	-0.091*** (0.025)	-0.054*** (0.007)
GTE*Government size	0.085*** (0.022)	0.053** (0.023)	-0.0008 (0.075)	0.089*** (0.024)	0.068 (0.063)	0.079*** (0.021)
Oil				-1.843** (0.889)		
Oil*Government size				-0.270 (2.965)		
Oil*GTE				0.113 (0.072)		
Oil*GTE*Government size				-0.131 (0.298)		
DD					-2.110*** (0.428)	
DD*Government size					-1.326 (1.046)	
DD*GTE					0.051* (0.026)	
DD*GTE*Government size					0.011 (0.066)	
MENA						-5.038*** (1.249)
MENA*Government size						1.729 (3.024)
MENA*GTE						0.056 (0.070)
MENA*GTE*Government size						-0.128 (0.265)
Constant	3.994** (1.721)	3.547* (1.897)	10.041 (6.808)	4.337*** (1.710)	4.241*** (1.303)	5.789*** (1.769)
Adjusted R square	27%	26%	30%	30%	30%	35%
Number of observation	580	484	96	583	589	580
Estimation method	2SLS					
Countries		YB<=30%	YB> 30%			
P-value	0	0	0	0	0	0
Number of instrument	1	1	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10%, 5% and 1% level, respectively. All models include all control variables included in models in Table 4-2 (results are not reported). For space restriction only the results of variables of interest are reported.

4.10.4 The Impact of the Joint Effect between Government Size and Trade Openness on the Level of Political Instability

Models 25 to 30 in Table 4.6 examine the impact of the joint effect between government size and trade openness on political instability under different circumstances.

Model 25 examines the impact of the joint effect between trade openness and government size on political instability in panel data. The independent effect of government size has the expected negative sign and is significant at the 1% level. The independent effect of trade openness has a negative coefficient although it is insignificant. This suggests that a low level of trade openness enhances political instability. The joint effect between trade openness and government size has a negative sign but is not significant. In other words, a government fails to enlarge its size to lower the adverse impact of a low level of trade openness on political environment. The interaction effect of government size on the level of political instability at mean percentage of trade openness 73.125% is -1.899[359]. The risk of political instability reduces by 0.777 units or 45% of one standard deviation of political instability when a government enlarges its size by a standard deviation at mean percentage of trade openness[360]. The interaction effect of trade openness on the level of political instability at mean percentage of government size 2.687% is -0.014[361]. Increasing the level of trade openness at mean percentage of government size lowers the risk of political instability by 0.666 units or 0.35% of one standard deviation of political instability[362].

A low level of trade openness increases unemployment and reduces economic opportunities in a country. Government size can be used to reduce unemployment, which in turn maintains the level of consumption in the economy (Cameron, 1978). This helps to compensate the public for lost economic benefits resulting from a low level of trade openness. Bricker and Foley (2013) point out that economic benefits brought by trade openness create common interests among the public to maintain stability. In other words, enlargement of government size offers employment opportunities that help to maintain the consumption level in a country required to maintain economic benefits. Control variables retain their sign and significance.

Models 26 and 27 examine the impact of the joint effect on political instability in countries where the percentage of youth bulge is less than or equal to 30% and in countries where their percentage is more than 30% respectively. The independent effect of government size and trade openness has a negative sign in both groups of countries.

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[359] The independent coefficient of government size + [(the coefficient of the joint effect *(73.125)(mean percentage of trade openness)]=-1.899.

[360] The coefficient of government size in the joint effect (1.899)*(0.409)(St. dev of a government size)=0.777 unit or 45%= (1.899*100)/(4.030)(St. dev of political instability).

[361] The independent coefficient of trade openness +[(coefficient of the joint effect*(2.687)(mean percentage of a government size)]=-0.014.

[362]The coefficient of trade openness in the joint effect (-.014)*(46.917)(St. dev of trade openness)=0.666 unit or 0.35%= (0.014*100)/(4.030)(St. dev of political instability).

However, there is variation in the impact of the joint effect across the two groups. In countries where their percentage is less than or equal to 30% the joint effect has a positive and significant coefficient at the 1% level. This suggests that enlargement of government size reduces the adverse impact of a low level of trade openness on political environment. On the other hand, the joint effect has a negative sign and is significant at the 5% level in countries where their percentage is more than 30%. This indicates that small government size enhances the adverse impact of a low level of trade openness on political environment. The interaction effect of government size at mean percentage of trade openness on instability in countries where their percentage is less than or equal to 30% is 0.482. Each one standard deviation expansion in government size at mean percentage of trade openness enhances instability by 0.165 units or 16% of one standard deviation of instability[363]. This is in contrast to its effect on instability in countries where their percentage is more than 30%, where enlargement of government size at mean percentage of trade openness by a standard deviation lowers political instability by 1.983 units or 100% of one standard deviation of instability[364]. The interaction effect of trade openness at mean percentage of government size on instability in countries where the percentage of youth bulge is less than or equal to 30% is 0.034. Increasing the level of trade openness by one standard deviation escalates instability by 1.724 units or 1% of one standard deviation of instability [365] while in countries where the percentage of youth bulge is more than 30% each one standard deviation decrease in trade openness enhances instability by 5.682 units or 3% of one standard deviation of instability[366].

Governments in countries where the percentage of youth bulge constitutes less than or equal to 30% successfully enlarge its size to lower the impact of trade openness on political instability while governments in countries where their percentage is more

[363] The independent coefficient of government size in Model 26 + [(the coefficient of the joint effect *(74.439)(mean percentage of trade openness in countries where the percentage of youth bulge less than 30%)]=0.482. The coefficient of government size in the joint effect (0.482)*(0.342)(St. dev of government size in these countries)=0.165 unit or 16%= (0.482*100)/(3.077)(St. dev of political instability).

[364]The independent coefficient of government size in Model 27 + [(the coefficient of the joint effect *(72.854)(mean percentage of trade openness in countries where the percentage of youth bulge more than 30%)]=-4.392.The coefficient of government size in the joint effect (-4.392)*(0.451)(St. dev of government size in these countries)=1.982 unit or 100%= (4.392*100)/(4.388)(St. dev of political instability).

[365] The independent coefficient of trade openness in Model 26 + [(the coefficient of the joint effect *(2.789)(mean percentage of government size in countries where the percentage of youth bulge less than 30%)]=0.034. The coefficient of trade openness in the joint effect (0.034)*(50)(St. dev of trade openness in these countries)=1.724 unit or 1%= (0.034*100)/(3.077)(St. dev of political instability).

[366]The independent coefficient of trade openness in Model 27 +[(the coefficient of the joint effect *(2.588)(mean percentage of government size in countries where the percentage of youth bulge more than 30%)]=-0.135. The coefficient of trade openness in the joint effect (-0.135)*(43)(St. dev of trade openness in these countries)=5.862 unit or 3%= (0.135*100)/(4.388)(St. dev of political instability).

than 30% fail to do so. In both groups of countries the level of trade openness and government size are similar[367]; however, there is a significant difference in the average percentage of youth bulge (the average percentage over the sample period is 21.5% in countries where their percentage is less than 30% vs. 34% in countries where their percentage is more than 30%). Therefore, countries with a percentage of youth bulge less than or equal to 30% can more easily absorb unemployment resulting from poor trade openness in the public sector than the other group of countries. This can be noted from the interaction effect of government size (trade openness) at mean percentage of trade openness (government size) required to stabilize the political environment in countries where the percentage of youth bulge is more than 30%, which is higher than the other group.

Model 28 examines the impact of the joint effect between government size and trade openness on the level of political instability in oil countries. The independent effect of government size has a negative sign; however, it is more effective in stabilizing the political environment in oil than non-oil countries. Similarly, the independent effect of trade openness has a negative sign; but its impact is more important for stability in oil countries than non-oil countries as the interaction effect between oil and trade openness has a negative sign although it is not significant. The joint effect of trade openness and government size has a negative sign; however, it turns into a positive impact in oil countries as the interaction term between oil and the joint effect has a positive sign although it is not significant. In other words, oil countries succeed in enlarging government size to lower the adverse impact of low trade openness on political environment. Enlargement of government size by a standard deviation at mean percentage of trade openness lowers instability in oil countries by 0.644 units or 40% of one standard deviation of political instability[368] and by 0.690 units or 42% in non-oil countries[369]. The interaction effect of trade openness on the level of political

[367] The average level of trade openness over the sample period is 73% in countries where the percentage of youth bulge is more than 30% vs. 74.4% in countries where their percentage is less than 30%. Similarly, government size in the former group is 2.588% vs. 2.78% in the latter group.

[368] The independent effect of government size + its interaction with oil dummy=-1.949) + (the coefficient of joint effect between a government size and trade openness + its coefficient in interaction term with oil dummy = (0.003)*(80.244)(mean percentage of trade openness in oil countries)= -1.626. The coefficient of government size in the joint effect (1.626)*(0.396)(St. dev of government size in oil countries)=0.664 unit or 40%=(1.626*100)/(4.071)(St. dev of political instability in oil countries).

[369] The independent effect of government size + the coefficient of joint effect of government size and trade openness (-0.003)*(75)(mean percentage of trade openness in non-oil countries)=-1.691. The coefficient of government size in the joint effect (1.691)*(0.408)(St. dev of government size in non-oil countries)=0.690 unit or 42%=(1.691*100)/(3.985)(St. dev of political instability in non-oil countries).

instability in oil countries at mean percentage of government size 2.714% is -0.008[370]. One standard deviation increase in trade openness at mean percentage of government size reduces the risk of political instability by 0.371 units or 0.21% of one standard deviation of political instability in oil countries[371] and by 0.718 units or 0.37% of one standard deviation of political instability in non-oil countries[372].

Enlarging government size in oil countries reduces the adverse impact of trade openness on political environment (the coefficient of independent effect of trade openness is -0.019 while the interaction effect is -0.008). Reserves accumulated from oil rents enable these countries to enlarge government size in response to a low level of trade openness or fluctuation in oil prices (their main export commodity). On the other hand, the joint effect enhances the impact of small government size and low level of trade openness on political environment (the coefficient of the independent effect of trade openness is -0.003 while the interaction effect is -0.014). It might be that these countries find it difficult to enlarge government size amidst a low level of trade openness, which in turn reduces public revenue. In such conditions, enlargement of government size might constitute extra taxes on the productive sector that is already suffering from low trade openness.

Model 29 examines the impact of the joint effect between government size and trade openness on the level of political instability in democratic countries. The independent effect of government size has a negative sign; however, it is more important in stabilizing the political environment in democratic than autocratic countries. The independent effect of trade openness has a negative sign; however, it exposes lower risk in democratic than autocratic countries. The joint effect of trade openness and government size has a negative and significant coefficient at the 1% level suggesting that small government size enhances the adverse impact of trade openness on political environment. However, the interaction effect between democracy and the joint effect is positive and significant at the 1% level. In other words, democratic countries reduce the adverse impact of a low level of trade openness on political

[370]The independent effect of trade openness + its interaction with oil dummy=-0.019)+ (the coefficient of joint effect between government size and trade openness + its coefficient in interaction term with oil dummy = 0.004)*(2.714)(mean percentage of a government size in oil countries)= -0.008.

[371]The coefficient of trade openness in the joint effect (-0.008)*(45)(St. dev of trade openness in oil countries)=0.371 unit or 0.27%=(0.008*100)/(4.071)(St. dev of political instability in oil countries).

[372]The independent coefficient of trade openness+ the coefficient of the joint effect between government size and trade openness*(2.684)(mean percentage of government size in non-oil countries)= -0.014. The coefficient of trade openness in the joint effect (-0.014)*(49.311)(St. dev of trade openness in non-oil countries)=0.718 unit Or 0.37% =(0.014*100)/(3.985)(St. dev of political instability in non- oil countries).

environment through enlarging government size. The interaction effect of government size on the level of political instability in democratic countries at mean percentage of trade openness 77.364% is 0.059[373]. One standard deviation increase in government size at mean percentage of trade openness increases the risk of political instability in democratic countries by 0.019 units or 2% of one standard deviation of political instability[374]. In contrast, one standard deviation enlargement of government size in autocratic countries lowers instability by 2.402 units or 126% of one standard deviation of political instability[375]. The interaction effect of trade openness on the level of political instability in democratic countries at mean percentage of government size 2.804% is 0.035[376]. One standard deviation increase in trade openness at mean percentage of government size increases the risk of political instability in democratic countries by 1.951 units or 1% of one standard deviation of political instability[377]. The interaction effect of trade openness on the level of political instability in autocratic countries at mean percentage of government size 2.615% is -0.208[378]. One standard deviation increase in trade openness at mean percentage of government size lowers the risk of political instability in autocratic countries by 8 units or 5% of one standard deviation of political instability[379].

The results of the joint effect indicate that enlargement of government size and a high level of trade openness has a negative effect on political environment in democratic countries although the effect is negligent. It might be that this negligent

[373] The independent effect of government size + its interaction with democracy dummy=-1.057) + (the coefficient of joint effect between government size and trade openness + its coefficient in interaction term with democracy dummy = (0.014)*(77)(mean percentage of trade openness in democratic countries)= 0.059.

[374] The coefficient of government size in the joint effect (0.059)(0.334)(St. dev of government size in democratic countries)=0.019 unit or 2%=(0.059*100)/(2.948)(St. dev of political instability in democratic countries).

[375]The independent effect of government size + [(the coefficient of the joint effect between government size and trade openness*(70.398)(mean percentage of trade openness in autocratic countries)]=-5.496. The coefficient of government size in the joint effect (-5.496)*(0.437)(St. dev of government size in autocratic countries)=2.402 unit or 126%=(-5.496*100)/(4.349)(St. dev of political instability in autocratic countries).

[376]The independent effect of trade openness + its interaction with democracy dummy=-0.005)+ (the coefficient of joint effect between government size and trade openness + its coefficient in interaction term with democracy dummy = 0.014)*(2.804)(mean percentage of government size in democratic countries)= 0.035.

[377] The coefficient of trade openness in the joint effect (0.035)*(55.582)(St. dev of trade openness in democratic countries)=1.951 units or 1%=(0.035*100)/(2.948)(St. dev of political instability in democratic countries).

[378] The independent coefficient of trade openness + [(the coefficient of joint effect between trade openness and government size*(2.615)(mean percentage of government size in autocratic countries)]= -0.208.

[379] The coefficient of trade openness in the joint effect (0.208)*(38.34)(St. dev of trade openness in autocratic countries)=8 unit or 5% =(0.208*100)/(4.349)(St. dev of political instability in autocratic countries).

effect contributes to the difference in adherence to democratic practices across these countries in addition to external risk brought by a high level of integration with international markets. This research uses dummy variables to group countries into democratic and autocratic countries based on the Freedom House data set; however, there is variation in the level of democracy across democratic countries according to their score in the Polity IV project. For example, several countries classified as democratic by the Freedom House data set have an average score in the Polity IV project over the sample period that falls far below the average in democratic countries [380]. Hence, adherence to democratic practices influences the relationship between the joint effect and political instability. In an immature democracy it is expected that trade openness breeds corruption; consequently, its economic benefits are not equally distributed across the population. Tavares (2005) and Amundsen (1999) find that economic reform leads to a high level of corruption when economic opportunities increase but accountability measures continue to be underdeveloped. Alternatively, a high level of trade openness brings both disadvantages and advantages. It might be that a high level of integration with international markets raises difficulties for governments to control macroeconomic environment such as aggregate demand and inflation rate as indicated by Cameron (1978). In such conditions, a government enlarges its size by creating employment opportunities; however, it may be that it cannot increase the wage level to match the level of the inflation rate. This deteriorates public employees' living standards and may spark anger against the government.

Model 30 examines the impact of the joint effect between government size and trade openness on the level of instability in the MENA region. The independent effect of government size has a negative sign and it is more important in stabilizing political environment in the MENA than non-MENA region. The independent effect of trade openness enhances political instability; however, it exposes lower political risk in the MENA region as the interaction coefficient between the MENA region and trade openness has a positive sign although it is not significant. The joint effect of trade openness and government size has a negative coefficient but is not significant, suggesting that small government size enhances the adverse impact of trade openness on political environment. However, it turns into a positive impact in the MENA region as the interaction effect between the MENA region and the joint effect has a positive sign and is significant at the 5% level. In other words, MENA countries reduce the

[380] The average score of democracy in these countries in Polity IV project is 18; while some countries that are classified as democratic in the Freedom House data set receive a score less than 18.

adverse impact of low levels of trade openness on political environment through enlarging government size. The interaction effect of government size on instability in the MENA region at mean percentage of trade openness 82% is 5.147[381]. Expansion of government size by one standard deviation at mean percentage of trade openness enhances instability by 1.695 units or 118% of one standard deviation of political instability[382]. In the non-MENA region, reducing government size at mean percentage of trade openness enhances instability by 0.385 units or 24% of one standard deviation of instability[383]. The interaction effect of trade openness on instability in the MENA region at mean percentage of government size 2.858% is 0.255. Each one standard deviation increase in trade openness at mean percentage of government size enhances instability by 9.115 units or 6% of one standard deviation of instability in the region[384], whereas one standard deviation decrease in trade openness enhances instability in non-MENA by 0.714 units or 0.39% of one standard deviation of instability[385].

The interaction effect of government size and trade openness in MENA suggests that enlargement of government size in response to a low level of trade openness has some negative effects. It might be that its size enlarges in terms of employment; however, the wage level does not similarly grow. Similarly, it might be that the level of trade openness is high; however, it is dominated by import rather than export in the region, which exposes the public to inflation rates in international markets. Its high rate amidst a fixed wage level deteriorates the living standards of public employee. For example, some countries in the region such as Egypt, Yemen, Morocco and Tunisia in 2008 experienced some forms of riots caused by a high inflation rate that had a negative effect on some people's ability to satisfy their basic living requirements. Its rate

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[381] The independent effect of government size + its interaction with MENA dummy=-1.960)+ (the coefficient of joint effect between government size and trade openness+ its coefficient in interaction term with MENA dummy =(0.086)*(82)(mean percentage of trade openness in MENA countries)= 5.147.

[382] The coefficient of government size in the joint effect (5.147)*(0.329)(St. dev of government size in MENA)=1.691 unit or 118%= (5.147*100)/(4.366)(St. dev of political instability in MENA).

[383] The independent effect of government size + [(the coefficient of the joint effect between government size and trade openness*(72)(mean percentage of trade openness in non-MENA countries)]=-0.932. The coefficient of government size in the joint effect (-0.932)*(0.412)(St. dev of government size in non-MENA countries)=0.385 unit or 24%=(-0.932*100)/(3.977)(St. dev of political instability in non MENA countries).

[384]The independent effect of trade openness + its interaction with MENA dummy=0.007) + (coefficient of joint effect between government size and trade openness+ its coefficient in interaction term with MENA dummy =(0.086)*(2.858)(mean percentage of government size in MENA countries)=0.255 .The coefficient of trade openness in the joint effect (0.255)*(35)(St. dev of trade openness in MENA)=9 unit or 6%= (0.255*100)/(4.366)(St. dev of political instability in MENA).

[385]The independent effect of trade openness + (coefficient of joint effect between government size and trade openness (-0.0039)*(2.666)(mean percentage of government size in non-MENA countries)=-0.015 .The coefficient of trade openness in the joint effect (-0.015)*(46.5)(St. dev of trade openness in non-MENA)=0.714 unit or .37%= (0.015*100)/(3.977)(St. dev of political instability in non-MENA).

contributes to political instability especially in low and middle-income economies where a sizeable portion of household incomes goes to food expenditure (Ansani and Daniele, 2012). Control variables retain their sign and significance except rents from natural resources that turns into an insignificant positive sign.

Table 4.6 The Joint Effect between Government Size and Trade Openness on the Level of Political Instability over the Period 1984-2013

Independent variables	Dependent variable: Political instability					
	Model 25	Model 26	Model 27	Model 28	Model 29	Model 30
Government Size	-1.715*** (0.522)	-0.544 (0.594)	-1.009 (1.748)	-1.479*** (0.525)	-0.094 (0.931)	-0.650 (0.556)
TO	-0.007*** (0.001)	-0.004** (0.001)	-0.015 (0.015)	-0.006*** (0.001)	-0.007 (0.009)	-0.004*** (0.001)
TO*Government size	-0.002 (0.008)	0.013*** (0.005)	-0.046* (0.025)	-0.003 (0.008)	-0.076*** (0.012)	-0.003 (0.007)
Oil				-1.750*** (0.629)		
Oil*Government size				-0.469 (1.924)		
Oil*TO				-0.012 (0.020)		
Oil*TO*Government size				0.006 (0.065)		
DD					-1.802*** (0.320)	
DD*Government size					-0.963 (1.003)	
DD*TO					0.002 (0.009)	
DD*TO*Government size					0.091*** (0.013)	
MENA						-6.139*** (1.172)
MENA*Government size						-1.310 (2.225)
MENA*TO						0.012 (0.016)
MENA*TO*Governme nt size						0.090** (0.043)
Constant	5.406*** (1.715)	4.431** (1.876)	8.597 (6.359)	5.898*** (1.753)	4.266*** (1.215)	7.492*** (1.868)
Adjusted R square	22%	25%	35%	21%	32%	32%
Number of observation	580	484	96	583	589	580
Estimation method	2SLS					
Countries		YB<= 30%	YB>30%			
P-value	0	0	0	0	0	0
Number of instrument	1	1	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10%, 5% and 1% level, respectively. All models include all control variables included in models in Table 4-2 (results are not reported). For space restriction only the results of variables of interest are reported.

4.10.5 The Impact of the Joint Effect between Government Size and Urban Growth Rate on the Level of Political Instability

Models 31 to 36 in Table 4.7 examine the impact of the joint effect between government size and urban growth rate on political instability under different conditions.

Model 31 examines the impact of the joint effect on instability in panel data. The independent effect of government size has the expected negative sign. The independent effect of urban growth rate has a positive sign and is significant at the 10% level. This suggests that a rapid urban growth rate enhances political instability. The joint effect between the two variables has a positive sign and significant coefficient at the 1% level; suggesting that the interaction effect of urban growth rate is more important than government size to destabilize the political environment. The interaction effect of government size on instability at mean urban growth rate 3.218% is -0.458. Reducing government size by one standard deviation at mean urban growth rate enhances instability by 0.187 units or 12% of one standard deviation of instability[386]. The interaction effect of urban growth rate on instability at mean percentage of government size 2.687% is 1.098. Each one standard deviation increase in urban growth rate at mean percentage of government size enhances instability by 3 units or 27% of one standard deviation of instability[387]. Control variables retain their sign and significance.

Models 32 and 33 examine the impact of the joint effect on instability in countries where the percentage of youth bulge is less than or equal to 30% and in countries where their percentage is more than 30% respectively. The joint effect in both groups has a positive sign; however, it exposes higher political risk in countries where their percentage is less than or equal to 30%. In other word, the interaction effect of urban growth rate is more important than government size to destabilize the political environment and the effect is higher in latter group of countries. In countries where youth bulge makes up less than or equal to 30% of population, expansion of government size by a standard deviation at mean urban growth rate 3% enhances instability by 0.349

[386]The independent effect of government size + [(the coefficient of the joint effect between government size and urban growth rate*(3.218)(mean percentage of urban growth rate)]=-0.458. The coefficient of government size in the joint effect (-0.458)*(0.409)(St. dev of a government size)=0.187 unit or 12%=(-0.458*100)/(4.030)(St. dev of political instability).

[387] The independent effect of urban growth rate + [(the coefficient of the joint effect between government size and urban growth rate*(2.678)(mean percentage of government size)]=1.098. The coefficient of urban growth in the joint effect (1.098)*(2.707)(St. dev of a urban growth rate)=2.971 unit or 27%=(1.098*100)/(4.030)(St. dev of political instability).

units or 33% of one standard deviation of instability[388], while in countries where their percentage is more than 30%, one standard deviation enlargement of government size lowers instability by 1.138 units or 57% of one standard deviation of instability[389]. The interaction effect of urban growth rate on instability at mean percentage of government size in countries where their percentage is less than or equal to 30% is 1.256. Each one standard deviation increase in urban growth rate at mean percentage of government size 2.789% enhances instability by 3.325 units or 41% of one standard deviation of instability [390] in comparison with 0.756 units or 6% in countries where their percentage is more than 30% [391] . Rapid urban growth rate produces different needs and requirements. It might be that governments in countries where their percentage is less than or equal 30% satisfy some of these needs but leave many unsatisfied. Hence, a slow or limited ability to meet these needs and requirements because of financial pressures and intense public pressure leads to instability. For example, a failure of government to meet basic needs like housing drives prices up. This comes at the expense of other basic needs of households.

Model 34 examines the impact of the joint effect on instability in oil countries. Large governments enhance political stability; however, it has a higher stabilization effect in oil than non-oil countries. The independent effect of urban growth rate enhances political instability; however, it exposes lower political risk in oil countries, as the interaction coefficient between oil and urban growth rate is negative and significant at the 5% level. The joint effect between urban growth rate and government size has a positive sign and significant coefficient at the 1% level; however, it turns into a negative impact in oil countries as the interaction term between the joint effect and oil dummy has a negative sign and significant coefficient at the 5% level. In other words, in non-oil countries the interaction effect of urban growth rate is more important than government

[388] The independent coefficient of government size in Model 32 + [(the coefficient of the joint effect *(3)(mean of urban growth rate in countries where the percentage of youth bulge less than 30%)]=1.020. The coefficient of government size in the joint effect (1.020)*(0.342)(St. dev of government size in these countries)=0.349 unit or 33%= (1.060*100)/(3.077)(St. dev of political instability).

[389] The independent coefficient of government size in Model 33 + [(the coefficient of the joint effect *(3.343)(mean of urban growth rate in countries where the percentage of youth bulge more than 30%)]=-2.514. The coefficient of government size in the joint effect (-2.514)*(0.451)(St .dev of government size in these countries)=1.134 unit or 57%= (2.514*100)/(4.388)(St. dev of political instability).

[390] The independent coefficient of urban growth rate in Model 32 + [(the coefficient of the joint effect *(2.789)(mean percentage of government size in countries where the percentage of youth bulge less than 30%)]=1.256. The coefficient of urban growth rate in the joint effect (1.256)*(2.647)(St. dev of a urban growth rate in these countries)=3.325 unit or 41%= (1.256*100)/(3.077)(St. dev of political instability).

[391] The independent coefficient of urban growth rate in Model 33 + [(the coefficient of the joint effect *(2.588)(mean percentage of government size in countries where the percentage of youth bulge more than 30%)]=0.268. The coefficient of urban growth rate in the joint effect (0.268)*(2.821)(St. dev of urban growth rate in these countries)=0.756 unit or 6%= (0.268*100)/(4.388)(St. dev of political instability).

size to destabilize the political environment; while, in oil countries it is vice versa. The impact of enlargement of government size at mean urban growth rate enhances political stability more substantially in oil than non-oil countries. In oil countries the interaction effect of government size on instability at mean urban growth rate 3.5% is -15. Enlargement of government size by one standard deviation at mean urban growth rate lowers instability by 6 units or 369% of one standard deviation of instability[392] in comparison with 0.060 units or 4% of one standard deviation of political instability in non-oil countries[393]. Enlargement of government size in oil countries turns the impact of urban growth rate on political instability into a negative. The interaction effect of urban growth rate on instability in oil countries at mean percentage of government size 2.715% is -9.75. Reduction in urban growth rate by one standard deviation at mean percentage of government size enhances instability by 22 units or 238% of one standard deviation of instability[394]; in contrast, one standard deviation increase in urban growth rate at mean percentage of government size enhances instability in non-oil countries by 3.193 units or 29% of one standard deviation of instability[395].

Enlargement of government size to meet rapid urban growth rate is more rewarded with stability in oil than non-oil countries. In oil countries enlargement of government size eliminates one prospective risk in their territories initiated from a low urban growth rate. Its low rate might be associated with high political instability because oil fields and expensive equipment are located in remote areas so that they become targets of rebellion and law breakers according to rent seeking theory (Smith, 2004). Enlargement of government size reduces the risk of low urban growth by

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[392] The independent effect of government size + its interaction with oil dummy=-3.451) + (the coefficient of joint effect between government size and urban growth rate + its coefficient in interaction term with oil dummy = (-3.316)*(3.5)(mean urban growth rate in oil countries)=-15. The coefficient of a government size in the joint effect (-15)*(0.396)(St. dev of a government size in oil countries)=6 unit or 369%=(15*100)/(4.071)(St. dev of political instability in oil countries).

[393] The independent effect of government size + the coefficient of joint effect of government size and urban growth rate (0.407)*(3.082)(mean urban growth rate in non-oil countries)=-0.147. The coefficient of government size in the joint effect (0.147)*(0.408)(St. dev of government size in non-oil countries)=0.060 unit or 4%=(0.147*100)/(3.985)(St. dev of political instability in non-oil countries).

[394]The independent effect of urban growth rate + its interaction with oil dummy=-0.712) + (the coefficient of joint effect between government size and urban growth rate + its coefficient in interaction term with oil dummy = (-3.316)*(2.714)(mean percentage of a government size in oil countries)= -9.717. The coefficient of urban growth rate in the joint effect (-9.717)*(2.169)(St. dev of urban growth rate in oil countries)=22 unit or 238%=(9.717*100)/(4.071)(St. dev of political instability in oil countries).

[395] The independent coefficient of urban growth rate + the coefficient of the joint effect between government size and urban growth rate*(2.684)(mean percentage of a government size in non-oil countries)=1.15. The coefficient of urban growth rate in the joint effect (1.15)*(2.774)(St. dev of urban growth in non-oil countries)=3.139 unit or 29% =(1.15*100)/(3.985)(St. dev of political instability in non-oil countries).

motivating people who live in these areas to move to urban areas to seek better livelihoods, which in turn reduces the risk of instability. In non-oil countries a small government enhances the adverse impact of urban growth rate on political environment. Governments in these countries might satisfy the need for services associated with urban growth rate by hiring human resources; however, they do not have sufficient financial resources to satisfy infrastructure needs. Under such conditions, people living in a small geographic area without access to many public goods and services might organize collective action against a government. Huntington (1968) argues that the imbalance in growth rate of socioeconomic and political environment leads to instability.

Model 35 examines the impact of the joint effect on instability in democratic countries. The independent effect of enlargement of government size enhances stability; however, it is more rewarded in autocratic than democratic countries. The independent effect of urban growth rate has a negative sign and is significant at the 5% level; however, it turns into a positive impact in democratic countries as the interaction term between democracy and urban growth rate has a positive sign and significant coefficient at the 1% level. The joint effect has a positive sign but is not significant. Additionally, it constitutes higher risk in democratic than autocratic countries as the interaction term between democracy and the joint effect has a positive sign but not significant. The results suggest that the interaction effect of urban growth rate is more important than government size to destabilize the political environment and the effect is higher in democratic than autocratic countries. The interaction effect of government size on instability in democratic countries at mean urban growth rate 2.971% is 0.322. Expansion of government size by one standard deviation at mean urban growth rate enhances instability by 0.107 units or 11% of one standard deviation of instability[396]; whilst in autocratic countries, enlargement of government size by one standard deviation at mean urban growth rate lowers instability by 0.741 units or 39% of one standard deviation of instability[397]. The interaction effect of urban growth rate on

[396] The independent effect of government size + its interaction with democracy dummy=-0.854) + (the coefficient of joint effect between government size and urban growth rate + its coefficient in interaction term with democracy dummy = (0.396)*(2.971)(mean of urban growth rate in democratic countries)=0.322. The coefficient of government size in the joint effect (0.322)(0.334)(St. dev of government size in democratic countries)=0.107 unit or 11%=(0.322*100)/(2.948)(St. dev of political instability in democratic countries).

[397] The independent effect of government size (-1.870) + (the coefficient of joint effect between a government size and urban growth rate (0.056)*(3.2)(mean of urban growth rate in autocratic countries) countries)=-1.690. The coefficient of government size in the joint effect (-1.690)(0.437)(St. dev of

instability in democratic countries at mean size of government 2.804 is 1.197. Each one standard deviation increase in urban growth rate at mean government size enhances instability by 2.920 units or 41% of one standard deviation of instability [398] in comparison with 0.009 units or 0.08% of one standard deviation of instability in autocratic countries[399].

Small government size enhances the adverse impact of urban growth rate on political environment in democratic and autocratic countries; however, the interaction effect of urban growth rate is higher in democratic than autocratic countries. In democratic countries enlargement of government size (in some instances) aims to address income inequality and ethnic fractionalization, as mentioned earlier. Therefore, when paid taxes are allocated to serve other non-productive areas at the expense of quantity and quality of public goods and services, it may spark public anger against a government. In autocratic countries, while one cannot rule out that enlargement of government aims to respond to urban growth needs, it might also be used to hire security forces[400]. Therefore, public dissatisfaction is addressed by force so that the interaction effect of urban growth rate is negligent. Collier and Hoeffler (2004) find that a high level of urbanization reduces the risk of political instability. Low population density and urbanization inhibits government ability to deal with political instability, especially in countries with a low level of economic development.

Model 36 examines the impact of the joint effect on instability in the MENA region. The independent effect of government size enhances instability; however, it exposes lower risk in MENA than non-MENA countries. The independent effect of urban growth rate enhances political instability, yet it exposes higher risk in the MENA than non-MENA region. The joint effect has a positive and significant coefficient suggesting that urban growth rate dominated the interaction effect; while, it is vice versa

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government size in autocratic countries)=0.741 unit or 39%=(-1.690*100)/(4.349)(St. dev of political instability in autocratic countries).

[398] The independent effect of urban growth + its interaction with democracy dummy=0.086)+ (the coefficient of joint effect between government size and urban growth rate + its coefficient in interaction term with democracy dummy =(0.396)*(2.804)(mean percentage of government size in democratic countries)=1.197. The coefficient of urban growth rate in the joint effect (1.197)*(2.438)(St. dev of urban growth rate in democratic countries)=2.920 unit or 41%=(1.197*100)/(2.948)(St. dev of political instability in democratic countries).

[399] The independent coefficient of urban growth rate + [(the coefficient of joint effect between urban growth and government size*(2.615)(mean percentage of government size in autocratic countries)]=0.003. The coefficient of urban growth rate in the joint effect (0.003)*(2.749)(St. dev of urban growth rate in autocratic countries)=0.009 unit or 0.08% =(0.003*100)/(4.349)(St. dev of political instability in autocratic countries).

[400] Proxy used to measure government size includes salaries of military forces.

in MENA region as the interaction effect between MENA and joint effect is negative although not significant. The interaction effect of government size on instability in the MENA region at mean urban growth rate 3.846% is -0.644. Enlargement of government size by one standard deviation lowers instability by 0.212 units or 15% of one standard deviation of instability[401]; while in the non-MENA region, expansion of government size at mean urban growth rate enhances instability by 0.256 units or 16% of one standard deviation of instability[402]. The interaction effect of urban growth rate on instability in the MENA region at mean size of government 2.858 is -0.480. Each one standard deviation decrease in urban growth rate at mean size of government enhances instability in the region by 1.117 units or 11% of one standard deviation of instability[403]; while in non-MENA region, one standard deviation increase in urban growth rate enhances instability by 4 units or 32% of one standard deviation of instability[404].

Government in the MENA region dominates the economic environment and labour market as mentioned earlier. Under such conditions, concentration of a high percentage of the population in a small geographic area is more feasible from both economic and security perspectives in order to stabilize the political environment. Economically, governments become more efficient in providing public goods and services to people residing in a small geographic area than a population spread over a large area. From a security perspective, governments can also easily enforce stability on public live in small geographic area.

[401] The independent effect of government size + its interaction with MENA dummy=0.211)+ (the coefficient of joint effect between government size and urban growth rate + its coefficient in interaction term with MENA dummy =(-0.222)*(3.846)(mean urban growth rate in MENA countries)=-0.644. The coefficient of government size in the joint effect (0.644)*(0.329)(St. dev of government size in MENA)=0.212 unit or 15%= (0.644*100)/(4.366)(St. dev of political instability in MENA).

[402] The independent effect of government size + [(the coefficient of the joint effect between government size and urban growth rate*(3.100)(mean urban growth rate in non-MENA countries)]=0.621. The coefficient of government size in the joint effect (0.621)*(0.412)(St. dev of government size in non-MENA countries)=0.256 unit Or 16%=(0.621*100)/(3.977)(St. dev of political instability in non MENA countries).

[403] The independent effect of urban growth rate + its interaction with MENA dummy=0.153) + (coefficient of joint effect between government size and urban growth rate + its coefficient in interaction term with MENA dummy =(-0.222)*(2.858)(mean percentage of government size in MENA countries)=-0.482 .The coefficient of urban growth rate in the joint effect (-0.482)*(2.313)(St. dev of urban growth rate in MENA)=1.117 unit or 11%= (0.482*100)/(4.366)(St. dev of political instability in MENA).

[404] The independent effect of urban growth + (coefficient of joint effect between government size and urban growth rate *(2.666)(mean percentage of government size in non-MENA countries)=1.279. The coefficient of urban growth rate in the joint effect (1.279)*(3.100)(St. dev of urban growth rate in non-MENA)=4 unit or 32%= (1.279*100)/(3.977)(St. dev of political instability in non-MENA).

Table 4.7 The Joint Effect between Government Size and Urban Growth Rate on the Level of Political Instability over the Period 1984-2013

Independent variables	Dependent variable: Political instability					
	Model 31	Model 32	Model 33	Model 34	Model 35	Model 36
Government Size	-1.689*** (0.496)	-0.310 (0.511)	-2.782** (1.406)	-1.404*** (0.501)	-1.870** (0.896)	-0.797 (0.556)
UGR	0.070* (0.040)	0.022 (0.038)	0.061 (0.149)	0.057 (0.041)	-0.139** (0.070)	0.059 (0.039)
UGR*Government size	0.382*** (0.123)	0.442*** (0.108)	0.079 (0.393)	0.407*** (0.125)	0.054 (0.247)	0.457*** (0.113)
Oil				-2.029*** (0.684)		
Oil*Government size				-2.047 (1.389)		
Oil*UGR				-0.769** (0.336)		
Oil*URG*Government size				-3.724** (1.463)		
DD					-1.913*** (0.336)	
DD*Government size					1.016 (0.981)	
DD*UGR					0.225*** (0.082)	
DD*UGR*Government size					0.341 (0.278)	
MENA						-5.046*** (1.268)
MENA*Government size						1.008 (2.570)
MENA*UGR						0.093 (0.246)
MENA*UGR*Government size						-0.680 (1.487)
Constant	6.193*** (1.700)	4.516** (1.788)	11.283* (6.536)	6.588*** (1.629)	5.278*** (1.247)	8.043*** (1.719)
Adjusted R square	24%	29%	30%	26%	31%	33%
Number of observation	580	484	96	583	589	580
Estimation method	2SLS					
Countries		YB<=30%	YB>30			
P-value	0	0	0	0	0	0
Number of instrument	1	1	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10%, 5% and 1% level, respectively. All models include all control variables included in models in Table 4-2 (results are not reported). For space restriction only the results of variables of interest are reported.

4.11 Empirical Results: The Joint Effect between Government Role and Unemployment Rate on Political Instability

Models 37 to 40 in Table 4.8 examine the impact of the joint effect between government role and youth unemployment on political instability.

Mode 37 examines the impact of the joint effect between government role and youth unemployment on instability in panel data. The independent effect of the role of government has a negative sign and significant coefficient at the 5% level; suggesting that expansion in government role by increasing expenditure on education has a stabilization effect on political environment. The independent effect of youth unemployment has a positive and significant sign at the 1% level; i.e. the higher youth unemployment the greater the risk of political instability. The joint effect between the two variables has a positive sign but is insignificant; suggesting that the interaction effect of youth unemployment is more important than government role to destabilize the political environment. The interaction effect of government role on political instability at mean rate of unemployment 2.727 is -2.616. Decreasing the role of government by one standard deviation at mean rate of unemployment enhances instability by 0.318 units or 65% of one standard deviation of instability[405]. The interaction effect of unemployment at mean percentage of government role 0.005% is 0.851. Each one standard deviation increase in unemployment rate at mean percentage of government role enhances instability by 0.547 units or 21% of one standard deviation of instability[406].

The interaction effect of unemployment dominates the impact of the joint effect on political instability. Some governments expand educational opportunities when they fail to create employment opportunities. This policy option succeeds in reducing the political risk of some segments of the population like youth bulge; however, it increases their political risk over the long run. This is because these opportunities will produce educated people who cannot be absorbed by the size of economy or its growth rate as per Huntington (1968). These will add to an already high unemployment rate that leads to instability. Control variables have a significant sign. The model is not re-estimated for countries where the percentage of youth bulge is less than or equal to 30% and for countries where their percentage is more than 30% because there is an insufficient number of observations in education expenditure for the former group of countries.

[405]The independent effect of the role of government + [(the coefficient of the joint effect between the role of government and youth unemployment*(2.727)(mean rate of unemployment)]=-2.606. The coefficient of the role of government in the joint effect (2.616)*(0.122)(St. dev of the role of government)=0.318 unit or 65%=(2.606*100)/(4.030)(St. dev of political instability).

[406]The independent effect of youth unemployment + [(the coefficient of the joint effect between the role of government and youth unemployment*(0.005)(mean percentage of government role)]=0.851. The coefficient of unemployment in the joint effect (0.851)*(0.642)(St. dev unemployment)=0.547 unit or 21%=(0.851*100)/(4.030)(St. dev of political instability).

Model 38 examines the impact of the joint effect between education expenditure and total youth unemployment on political instability in oil countries. The independent effect of public education expenditure has a negative and significant coefficient, suggesting that the role of government in enhancing education lowers the level of political instability. However, the interaction term between oil and education expenditure is positive although not significant. In other words, the negative effect from education expenditure on political instability becomes positive in oil producing countries compared to non-oil countries. Furthermore, the effect of education is more effective in lowering political instability in non-oil countries than oil countries. On the other hand, the independent effect of youth unemployment enhances political instability; however, it exposes lower political risk in oil countries, as the interaction coefficient between oil and total youth unemployment is negative and significant at the 1% level. Moreover, the joint effect between total youth unemployment and education expenditure has a significant negative impact in oil countries. In other words, the positive role of government with youth unemployment lowers the risk of political instability in oil countries. The results reveal that the interaction effect of government role is more important than unemployment to destabilize the political environment. The interaction effect of the role of government on instability in oil countries at mean rate of unemployment 2.729% is -64.64. Oil countries face a lower risk of political instability than non-oil countries by 9 units or 1588% of one standard deviation of political instability when a government role expands by one standard deviation at mean rate of unemployment[407]. Similarly, the interaction effect of unemployment at mean percentage of government role is less risky in oil than non-oil countries. Its political risk is lower in oil than non-oil countries by 1.129 units or 47% of one standard deviation of instability when its rate increases by one standard deviation[408].

[407] The independent effect of the role of government + its interaction with oil dummy=1.585)+ (the coefficient of joint effect between the role of government and unemployment + its coefficient in interaction term with oil dummy = (-24.528)*(2.729)(mean rate of unemployment in oil countries)=-64.64. The coefficient of the role of government in the joint effect (-64.64)*(0.132)(St. dev of the role of government in oil countries)= 9 unit or 1588%=(64.64*100)/(4.071)(St. dev of political instability in oil countries).

[408] The independent effect of youth unemployment + its interaction with oil dummy=-1.859)+ (the coefficient of joint effect between the role of government and unemployment + its coefficient in interaction term with oil dummy = (-24.528)*(0.0025)(mean percentage of the government role in oil countries)=-1.926. The coefficient of unemployment rate in the joint effect (-1.926)*(0.586)(St. dev unemployment in oil countries)= 1.125 unit or 47%=(1.926*100)/(4.071)(St. dev of political instability in oil countries).

The variation in the impact of the joint effect on political instability between oil and non-oil countries suggests that oil countries successfully expand educational opportunities as an alternative option of employment to reduce the adverse impact of unemployment on political environment in line with rentier state theory. In non-oil countries, more investment on education amidst a high rate of youth unemployment enhances political instability. This positive relationship can be explained in that expanding education expenditure amidst unemployment constitutes an increase in taxes on the productive sector, which in turn reduces its ability to create employment. Hence, in these countries the policy option to reduce the political risk of unemployment requires using public resources to create favorable economic environments to absorb unemployment.

Model 39 examines the impact of the joint effect on instability in democratic countries. The independent effect of government role has a negative sign, suggesting that investing in education breeds stability; however, its stabilization effect is more important in autocratic countries than democratic countries. The independent effect of youth unemployment exposes higher risk on political environments in democratic than autocratic countries. The joint effect of government role and youth unemployment has a negative sign although it is insignificant; however, it has a positive impact on democratic countries as the interaction term between democracy and the joint effect has a positive sign but is not significant. The results reveal that in democratic countries the interaction effect of youth unemployment is more important than government role to destabilize the political environment; while, it is vice versa in autocratic countries. In other words, democratic countries fail to expand government roles to lower the risk of unemployment on political environment, while the positive response from autocratic countries lowers such risk. The interaction effect of the role of government on instability in democratic countries at mean rate of unemployment 2.732% is 0.264. Democratic countries face higher risk of instability than autocratic countries by 0.027 units or 9% of one standard deviation of instability[409] when the government role expands by a standard deviation at mean rate of unemployment. The interaction effect of unemployment at mean role of government is more risky in democratic than autocratic

[409] The independent effect of the role of government + its interaction with democracy dummy=-3.103) + (the coefficient of joint effect between the role of government and unemployment + its coefficient in interaction term with democracy dummy = (1.232)*(2.732)(mean rate of unemployment in democratic countries)=0.264. The coefficient of the role of government in the joint effect (0.264)*(0.102)(St. dev of the role of government in democratic countries)= 0.027 unit or 9%=(0.264*100)/(2.981)(St. dev of political instability in democratic countries).

countries. It is higher by 0.718 units or 42% of one standard deviation of instability when unemployment increases by a standard deviation at mean role of government[410].

In autocratic countries, investment in education reduces the risk of unemployed youth on political environment. Investing in education in autocratic countries stabilizes the political environment through stimulating economic development, which lays the foundation to move towards democracy in the future. Brown and Hunter (2004) point out that economic growth brought by education enhances government legitimacy in autocratic countries. Additionally, it assists a government's effort to increase an individual's opportunity cost. Increasing public resources additionally helps a government to outspend anti-government movements (Thyne, 2006). Economic wealth and civic skills resulting from education further lay the foundation to move towards democracy. This is because education clarifies rights, obligations and punishments associated with citizenship. It enhances co-operation between different segments of a society. It provides citizens with equal opportunities and it combines the different interests and objectives of different groups under common citizenship (Heyneman, 2003). On the other hand, in democratic countries there is no shortage of qualified youth as the percentage of gross tertiary enrolment is high (around 40%) so that a government might consider re-allocation of expenditure on education to improve conditions in the labor market such as encouraging entrepreneurship by offering soft loans, business support or tax exemption. Control variables retain their sign and significance except economic growth and trade openness that turn into insignificant negative and insignificant positive sign, respectively.

The importance of the joint effect on instability in the MENA region is investigated in Model 40. The independent effect of the role of government has a negative sign; however, its stabilization effect is substantially higher in the MENA region. This suggests that expenditure on education brings a high level of stability. The independent effect of youth unemployment enhances political instability; however, it exposes lower political risk in MENA countries, as the interaction coefficient between MENA and total youth unemployment is negative but insignificant. Moreover, the joint

[410] The independent effect of unemployment + its interaction with democracy dummy=1.232) + (the coefficient of joint effect between the role of government and unemployment + its coefficient in interaction term with democracy dummy=(1.232)*(0.006)(mean percentage of the role of government in democratic countries)=1.241. The coefficient of unemployment in the joint effect (1.241)*(0.578)(St. dev unemployment in democratic countries)=0.718 unit or 42%=(1.241*100)/(2.981)(St. dev of political instability in democratic countries).

effect between the two variables has a negative impact on political instability in MENA countries. This suggests that the interaction effect of government role is more important than youth unemployment to destabilize the political environment. MENA countries face a lower risk of instability than non-MENA region by 1.098 units or 187% of a standard deviation of instability when the government role expands by a standard deviation at mean rate of youth unemployment[411]. Similarly, the interaction effect of unemployment constitutes a lower risk on political environment in the MENA region than non-MENA. Each one standard deviation increase in unemployment rate at mean percentage of the role of government enhances instability in the region by 0.470 units or 20% of one standard deviation of instability[412]; in comparison with 0.582 units or 23% of one standard deviation of instability in non-MENA region[413].

In the MENA region countries can waive the risk of youth unemployment over the short run by expanding its role. This gives governments in the region a period of time in which to work on factors leading to a high unemployment rate such as corruption, a large public sector, and weak entrepreneurship as discussed earlier in this thesis. Failing to do so will increase the number of educated youth with an adverse impact on political environment. In general, control variables retain their sign and significance.

[411] The independent effect of the role of government + its interaction with MENA dummy=-7.072) + (the coefficient of joint effect between the role of government and unemployment + its coefficient in interaction term with MENA dummy = (-0.348)*(3.073)(mean rate of unemployment in MENA countries)=-8.142. The coefficient of the role of government in the joint effect (-8.142)*(0.135)(St. dev of the role of government in MENA countries)= 1.098 unit or 187%=(-8.142*100)/(4.366)(St. dev of political instability in MENA countries).

[412] The independent effect of unemployment + its interaction with MENA dummy=0.869) + (the coefficient of joint effect between the role of government and unemployment + its coefficient in interaction term with MENA dummy=(-0.348)*(-0.005)(mean percentage of the role of government in MENA countries)=0.871. The coefficient of unemployment in the joint effect (0.871)*(0.539)(St. dev unemployment in MENA countries)=0.471 unit or 20%=(0.871*100)/(4.366)(St. dev of political instability in MENA countries).

[413] The independent effect unemployment + the coefficient of joint effect of the role of government and unemployment rate (1.273)*(0.006)(mean percentage of the role of government in non-MENA countries)=0.909. The coefficient of unemployment in the joint effect (0.909)*(0.64)(St. dev of unemployment in non-MENA countries)=0.582 unit or 23%=(0.909*100)/(3.977)(St. dev of political instability in non-MENA countries).

Table 4.8 The Joint Effect between Government Role and Youth Unemployment on the Level of Political Instability over the Period 1984-2013

Independent variables	Dependent variable: Political instability			
	Model 37	Model 38	Model 39	Model 40
Education Expenditure	-3.962** (1.825)	-2.884** (1.449)	-6.230* (3.478)	-3.370** (1.729)
TYU	0.849*** (0.191)	0.899*** (0.188)	-0.336 (0.501)	0.902*** (0.180)
Education Expenditure*TYU	0.497 (2.009)	1.460 (1.854)	-3.609 (4.364)	1.273 (1.870)
Oil		-4.097*** (0.951)		
Oil*Education Expenditure		4.469 (6.229)		
Oil*TYU		-2.759*** (0.874)		
Oil*TYU*Education Expenditure		-25.719*** (8.659)		
DD			-1.869*** (0.345)	
DD*Education Expenditure			3.126 (3.661)	
DD*TYU			1.569*** (0.550)	
DD*TYU*Education Expenditure			4.842 (4.780)	
MENA				-8.628*** (1.552)
MENA*Education Expenditure				-3.701 (4.388)
MENA*TYU				-0.033 (0.872)
MENA*TYU*Education Expenditure				-1.621 (9.691)
Constant	4.246*** (1.603)	7.466*** (1.934)	3.885*** (0.958)	8.043*** (2.057)
Adjusted R square	26%	30%	34%	34%
Number of observation	378	376	387	378
Estimation method	2SLS			
P-value	0	0	0	0
Number of instrument	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10%, 5% and 1% level, respectively. All models include all control variables included in models in Table 4-2 (results are not reported). For space restriction only the results of variables of interest are reported.

4.12 Empirical Results: The Joint Effect between Government Role and Urban Growth Rate on Political Instability

Models 41 to 44 in Table 4.9 examine the impact of the joint effect between urban growth rate and the role of government on political instability under different circumstances.

Model41 examines the impact of the joint effect between urban growth rate and government role on instability in panel data. The empirical results find the risk of political instability decreases by increasing the level of expenditure on education, as the independent effect of government role has a negative and significant coefficient. The independent effect of urban growth rate has a positive and significant coefficient, suggesting its rapid change enhances political instability. The joint effect between the two variables has a negative sign and significant coefficient at the 10% level. The results point out that the interaction effect of government role is more important than urban growth rate to destabilize the political environment. Put it differently, a government that successfully expands its role reduces the risk of political instability from the prospective channel of rapid urban growth rate that places pressure on educational institutions. The interaction effect of government role on instability at mean urban growth rate 3.218% is -7.142. The failure of government to carry out its role by a standard deviation at mean urban growth rate enhances instability by 0.873 units or 177% of one standard deviation of political instability[414]. The interaction effect of urban growth rate on instability at mean percentage of government role 0.005% is 0.137. The upward change by a standard deviation in urban growth rate at mean percentage of the government role enhances instability by 0.371 units or 4% of one standard deviation of political instability[415].

Expenditure in education has a direct and indirect stabilization effect on political environment. Directly, it reduces pressure on educational institutions resulting from rapid urban growth rate as suggested by modernization theory. It increases an individual's opportunity cost to commit political instability incidences as stated by opportunity perspective (Taydas et al., 2010). Indirectly, it produces qualified human resources to meet new needs and requirements resulting from the level of economic development, such as health care, as stated by Wagner law (Lee, 1993). By doing so, a government shows the public, with their different needs and requirements, that it cares about their living standards and actively devotes financial resources to improve it

[414] The independent effect of the role of government + the coefficient of joint effect of the role of government and urban growth rate (-0.966)*(3.218)(mean urban growth rate)=-7.142. The coefficient of the role of government in the joint effect (-7.142)*(0.122)(St. dev of the role of government)=0.873 unit or 177%=(-7.142*100)/(4.030)(St. dev of political instability).

[415] The independent effect of urban growth rate + the coefficient of joint effect of the role of government and urban growth rate (-0.966)*(0.005)(mean percentage of the government role)=0.137. The coefficient of the urban growth rate in the joint effect (0.137)*(2.707)(St. dev of urban growth rate)=0.371 unit or 4%=(0.137*100)/(4.030)(St. dev of political instability).

(Taydas and Peksen, 2012). Control variables retain their sign and significance except economic growth and trade openness that turn into an insignificant negative and positive sign respectively.

Model 42 examines the impact of the joint effects on instability in oil countries. The independent effect of government role has a negative and significant coefficient suggesting that the role of government in enhancing education lowers the level of political instability; however, its impact is higher in oil countries. The independent effect of urban growth rate enhances political instability; however, its political risk is lower in oil countries as its interaction with oil dummy has a negative coefficient although it is insignificant. The joint effect between the two variables has a negative impact on political instability; however, its impact is substantially higher in oil countries. This suggests that the interaction effect of government role is more important than urban growth rate to destabilize the political environment and such effect is higher in oil than non-oil countries. The interaction effect of the role of government on political instability at mean rate of urban growth is higher in oil than non-oil countries. One standard deviation expansion in the role of government at mean urban growth rate enhances stability in oil countries by 5.678 units or 1047% of one standard deviation of political instability[416] in comparison with 0.685 units or 147% of one standard deviation of instability in non-oil countries[417]. The interaction effect of urban growth rate on instability in oil countries at mean percentage of the role of government 0.003 is -1.102. Each one standard deviation decrease in urban growth rate at mean percentage of government role feeds instability in oil countries by 2.395 units or 27% of one standard deviation of instability[418], while one standard deviation increase in urban growth rate at

[416]The independent effect of the role of government + its interaction with oil dummy=-9.017) + (the coefficient of joint effect between the role of government and urban growth rate + its coefficient in interaction term with oil dummy = (-9.637)*(3.491)(mean of urban growth rate in oil countries)=-42.567. The coefficient of the role of government in the joint effect (-42.567)*(0.133)(St. dev of the role of government in oil countries)=5.678 unit or 1047%=(42.567*100)/(4.071)(St. dev of political instability in oil countries).

[417]The independent effect of the role of government + the coefficient of joint effect of the role of government and urban growth rate (-0.975)*(3.082)(mean urban growth rate in non-oil countries)=-5.855. The coefficient of the role of government in the joint effect (-5.855)*(0.117)(St. dev of the role of government in non-oil countries)=0.685 unit or 147%=(5.855*100)/(3.985)(St. dev of political instability in non-oil countries).

[418] The independent effect of urban growth rate + its interaction with oil dummy=-1.077)+ (the coefficient of joint effect between the role of government and urban growth rate+ its coefficient in interaction term with oil dummy = (-9.737)*(0.003)(mean percentage of the government role in oil countries)=-1.104. The coefficient of urban growth rate in the joint effect (-1.104)*(2.169)(St. dev of urban growth in oil countries)=2.395 unit or 27%=(1.104*100)/(4.071)(St. dev of political instability in oil countries).

mean percentage of the government role enhances instability in non-oil countries by 0.445 units or 4% of one standard deviation of instability[419].

Oil countries can deescalate instability by making it attractive to the public who reside in remote areas to move to urbanized areas through increasing their expenditure on education. This eliminates the risk of political instability from lawbreakers and people seeking oil rents and expensive equipment located in remote areas, as suggested by rent seeking theory (Smith, 2004). Control variables retain their sign and significance.

Model 43 investigates the impact of the joint effect on instability in democratic countries. The independent effect of government role has a negative and significant coefficient at the 10% level, suggesting that the role of government in terms of investing in education decreases the level of political instability. However, it has a lower stabilization effect in democratic countries, as the interaction term between democracy and government role is positive although not significant. In other words, investing in education is more rewarded in autocratic than democratic countries. The independent effect of urban growth rate enhances political instability; however, it exposes higher political risk in democratic countries, as the interaction coefficient between democracy and urban growth is positive and significant at the 5% level. Moreover, the joint effect between urban growth rate and education expenditure has a negative impact on political instability and it is more important in democratic than autocratic countries as the interaction term between democracy and the joint effect has a positive sign but is not significant. The results reveal that that the interaction effect of education expenditure is more important than urban growth rate to destabilize the political environment and such effect is higher in democratic than autocratic countries. Increasing public expenditure on education in response to educational needs arising from urban growth rate lowers the risk of political instability. Increasing public expenditure on education by a standard deviation at mean urban growth rate decreases instability in democratic countries by 0.666 units or 220% of one standard deviation of instability[420] comparing to 1.203 units

[419]The independent effect of urban growth rate + the coefficient of joint effect of the role of government and urban growth rate (-0.975)*(0.005)(mean percentage of the government role in non-oil countries)=0.160. The coefficient of urban growth rate in the joint effect (0.160)*(2.774)(St. dev of urban growth rate in non-oil countries)=0.445 unit or 4%=(0.16*100)/(3.985)(St. dev of political instability in non-oil countries).

[420]The independent effect of the role of government + its interaction with democracy dummy=-3.314) + (the coefficient of joint effect between the role of government and urban growth rate+ its coefficient in interaction term with democracy dummy = (-1.071)*(2.971)(mean of urban growth rate in democratic countries)=-6.497. The coefficient of the role of government in the joint effect (-6.497)*(0.102)(St. dev of

or 201% in autocratic countries[421]. The interaction effect of urban growth rate on instability in democratic countries at mean percentage of the role of government 0.006% is 0.151. Instability enhances by 0.368 units or 5% of one standard deviation of political instability for each one standard deviation increase in urban growth rate[422]; while each one standard deviation decrease in urban growth rate enhances instability by 0.178 units or 1.28% of one standard deviation of political instability in autocratic countries[423].

In autocratic countries enlargement of government role fails to mitigate the adverse impact of low urban growth rate on political environment. When countries do not have sufficient financial resources to enforce stability over their entire territory, investing in education concentrates the public in a small geographic area. This constitutes less financial resources being allocated to security forces so that more financial resources can be allocated to sectors to build stability. Collier and Hoeffler (2004) point out that a more urbanized population in countries at a low level of development enhances stability. Descriptive analysis confirms the result in the case of Sri Lanka which experiences a higher risk of political instability (its average score over the sample period is 13 vs. 9 in autocratic countries), has a low level of expenditure in education (its average is 0.9% vs. 1.3% in autocratic countries) and a low urban growth rate (0.433% vs. 3.4% in autocratic countries). In democratic countries, while increasing education expenditure reduces the adverse impact of high urban growth rate on political environment, its impact still exists. It might be that in these countries a government successfully responds to one need arising from urban growth rate (which is education), however, it experiences difficulty in responding to other needs. This is because the needs and requirements produced by level of economic development (as stated by

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the role of government in democratic countries)=0.665 unit or 220%=(6.497*100)/(2.948)(St. dev of political instability in democratic countries).

[421] The independent effect of the role of government + the coefficient of joint effect of the role of government and urban growth rate (-0.702)*(3.201)(mean urban growth rate in autocratic countries)=-8.762. The coefficient of the role of government in the joint effect (-8.762)*(0.137)(St. dev of the role of government in autocratic countries)=1.203 unit or 201%=(8.762*100)/(4.349)(St. dev of political instability in autocratic countries).

[422] The independent effect of urban growth rate + its interaction with democracy dummy=0.158) + (the coefficient of joint effect between the role of government and urban growth rate+ its coefficient in interaction term with democracy dummy = (-1.071)*(0.006)(mean percentage of government role in democratic countries)=0.151. The coefficient of urban growth rate in the joint effect (0.151)*(2.438)(St. dev of urban growth rate in democratic countries)= 0.368 unit or 5%=(0.151*100)/(2.948)(St. dev of political instability in democratic countries).

[423] The independent effect of urban growth rate + the coefficient of joint effect of the role of government and urban growth rate (-0.702)*(0.004)(mean percentage of government role in autocratic countries)=-.055. The coefficient of urban growth rate in the joint effect (-0.055)*(3.201)(St. dev of urban growth rate in autocratic countries)=0.178 unit or 1.28%=(0.055*100)/(4.349)(St. dev of political instability in autocratic countries).

Wagner law) represents needs of different segments of society (Lee, 1993). The failure of government to satisfy needs of the majority in democratic countries leads to instability (Fjelde and Hegre, 2014). Control variables retain their sign and significance.

Model 44 examines the impact of the joint effect on instability in the MENA region. The independent effect of government role has a negative and significant coefficient at the 10% level, suggesting that the role of government in enhancing education lowers the level of political instability. It is more important in stabilizing the political environment in the MENA region than non-MENA region. Similarly, urban growth rate is positively associated with instability and its impact is substantially higher in the MENA than non-MENA region. The joint effect between urban growth rate and education expenditure has a negative sign and significant coefficient at the 10% level; however, it has a positive impact in MENA as the interaction term between MENA and the joint effect has a positive sign and significant coefficient at the 5% level. In other words, in MENA region the interaction effect of urban growth rate is more important than government role to destabilize the political environment; while, it is vice versa in non-MENA region. The interaction effect of government role at mean urban growth rate exposes a higher risk on political environment in the MENA than non-MENA region. Expansion of government role at mean urban growth rate enhances instability in the MENA region by 3.313 units or 563% of one standard deviation of political instability[424], while in non-MENA, instability increases by 0.755 units or 159% of one standard deviation of instability for each one standard deviation reduction in the role of government[425]. Similarly, the interaction effect of urban growth rate constitutes a higher risk on political environment in the MENA than non-MENA region. Urban growth rate increase by a standard deviation at mean percentage of government role enhances

[424]The independent effect of the role of government + its interaction with MENA dummy=-8.374) + (the coefficient of joint effect between the role of government and urban growth rate+ its coefficient in interaction term with MENA dummy = (8.564)*(3.846)(mean of urban growth rate in MENA countries)=24.567. The coefficient of the role of government in the joint effect (24.567)*(0.135)(St. dev of the role of government in MENA countries)=3.313 unit or 563%=(24.567*100)/(4.366)(St. dev of political instability in MENA countries).

[425]The independent effect of the role of government + the coefficient of joint effect of the role of government and urban growth rate (-0.975)*(3.1)(mean urban growth rate in non-MENA countries)=-6.341. The coefficient of the role of government in the joint effect (-6.341)*(0.119)(St. dev of the role of government in non-MENA countries)= 0.755 unit or 159%=(6.341*100)/(3.977)(St. dev of political instability in non-MENA countries).

instability in the region by 2.333 units or 23% of a standard deviation of instability[426] in comparison with 0.442 units or 4% in non-MENA region[427].

The positive joint effect in the MENA region might be because the growth rate in education expenditure falls behind urban growth rate. Descriptive statistics in MENA show that the average urban growth rate over the sample period is 4% while expenditure on education grows by 1.5%. Shambayati (1994) presents the impact of oil rents on socioeconomic and political environment in Iran prior to the 1979 revolution. Oil rents speed up the level of rural-urban migration with the hope that urban life would improve the migrants' living standards; however, migrants are disappointed when their expectations are not met. This creates feelings of actual and relative deprivation among a wide segment of a society that set the stage for the Iranian revolution in 1979. Control variables retain their sign and significance.

[426] The independent effect of urban growth rate + its interaction with MENA dummy=1.053) + (the coefficient of joint effect between the role of government and urban growth rate + its coefficient in interaction term with MENA dummy = (8.564)*(0.005)(mean percentage of the role of government in MENA countries)=1.007. The coefficient of urban growth rate in the joint effect (1.007)*(2.313)(St. dev of urban growth rate in MENA countries)=2.333 unit or 23%=(1.007*100)/(4.366)(St. dev of political instability in MENA countries).

[427] The independent effect of urban growth rate + the coefficient of joint effect of the role of government and urban growth rate (-0.975)*(0.005)(mean percentage of government role in non-MENA countries)=0.158. The coefficient of urban growth rate (0.158)*(2.794)(St. dev of urban growth rate in non-MENA countries)= 0.442 unit or 4%=(0.158*100)/(3.977)(St. dev of political instability in non-MENA countries).

Table 4.9 The Joint Effect between Government Role and Urban Growth Rate on the Level of Political Instability over the Period 1984-2013

Independent variables	Dependent variable: Political instability			
	Model 41	Model 42	Model 43	Model 44
Education Expenditure	-4.032** (1.783)	-2.848** (1.399)	-6.513* (3.782)	-3.317* (1.727)
UGR	0.142*** (0.043)	0.165*** (0.044)	-0.052 (0.068)	0.164*** (0.045)
Education Expenditure*UGR	-0.966* (0.508)	-0.975** (0.490)	-0.702 (0.475)	-0.975* (0.541)
Oil		-3.683*** (0.880)		
Oil*Education Expenditure		-6.168 (7.134)		
Oil*UGR		-1.243 (0.832)		
Oil*UGR*Education Expenditure		-8.661 (8.189)		
DD			-2.256*** (0.384)	
DD*Education Expenditure			3.198 (3.879)	
DD*UGR			0.210** (0.088)	
DD*UGR*Education Expenditure			-0.368 (0.688)	
MENA				-8.477*** (1.628)
MENA*Education Expenditure				-5.057 (3.440)
MENA*UGR				0.888** (0.445)
MENA*UGR*Education Expenditure				9.539** (4.189)
Constant	2.472 (1.724)	5.028*** (1.915)	2.298** (1.101)	6.148*** (2.082)
Adjusted R square	26%	31%	34%	35%
Number of observation	378	376	387	378
Estimation method	2SLS			
P-value	0	0	0	0
Number of instrument	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10%, 5% and 1% level, respectively. All models include all control variables included in models in Table 4-2 (results are not reported). For space restriction only the results of variables of interest are reported.

4.13 Sensitivity Analysis

Sensitivity analysis is carried out using an alternative proxy of political instability adopted from Saha and Yap (2013), an alternative proxy of government size from the Heritage Foundation and an alternative estimation technique (fixed effect period effect)[428]. It will be estimated for Model 2 that examines the independent effect of government size on political instability; Model 7 that examines the joints effect of

[428] Results are attached in the appendix; models 37 and 41 are not estimated using alternative proxy of education expenditure.

government size and youth unemployment on political instability; Model 13 that investigates the impact of joint effect of corruption and government size on political instability; Model 19 that examines the impact of gross tertiary enrolment on political instability moderated by the government size; Model 25 that examines the impact of trade openness on political instability moderated by government size; Model 31 that tests the impact of urban growth rate moderated by government size on political instability; and Models 37 and 41 that examine, respectively, the impact of unemployment and urban growth rate on political instability moderated by educational expenditure.

In general, the independent effect of government size and the role of government on political instability maintain their sign and significance under an alternative proxy of political instability, government size and estimation technique. A government can stabilize the political environment through enlarging its size or expanding the government role.

The effect of government size moderated by youth unemployment on political instability examined in Model 7 maintains its sign and significance when it is estimated using an alternative proxy of instability, alternative proxy of the government size and fixed effect (year).

The impact of the joint effect of corruption and government size on political instability tested in Model 13 shows variation in the results under alternative proxies of government size and political instability as well as the alternative estimation technique. The joint effect maintains its sign under an alternative proxy of the government size and political instability; however, it yields a significant expected positive sign under fixed effect technique (period effect).

The impact of government size on political instability moderated by gross tertiary enrolment investigated in Model 19 retain its sign under an alternative proxy of political instability and government size, but it turns into a significant negative sign when the model is estimated using fixed effect (period effect).

Across all models the impact of the joint effect of trade openness and government size and the joint effect of government size and urban growth rate on political instability maintains its sign and significance.

The impact of the role of government on political instability moderated by youth unemployment and urban growth rate is estimated using an alternative proxy of instability and fixed effect (period effect). The role of government maintains its sign when the model is estimated using an alternative proxy of instability, however under fixed effect it turns into a significant negative sign. The impact of the interaction between the role of government and urban growth rate does not maintain either its sign or its significance under an alternative proxy of instability or fixed effect.

4.14 Conclusion and Discussion

This study assumes that a government can reduce the risk of political instability in a country through enlarging its size or expanding its role in response to a poor socioeconomic environment. Therefore, the study examines the independent effect of government size on political instability. Furthermore, it examines the impact of youth unemployment, corruption, gross tertiary enrolment, trade openness, and urban growth rate moderated by government size on political instability. Additionally, it investigates the independent effect of the role of government and its moderated effect in the form of youth unemployment and urban growth rate on political instability. The hypotheses set are investigated using 2SLS in a panel data analysis, countries where the percentage of youth bulge is less than or equal to 30%, countries where youth bulge makes up more than 30% of the population, oil countries, democratic countries and the MENA region.

4.14.1 The Independent Effect of Government Size on Political Instability

The first hypothesis assumes that enlargement of government size lowers the risk of political instability. The empirical results confirm the hypothesis across all sub-samples used in the empirical analysis; however, its marginal effect varies based on each sub-sample's unique circumstances.

The negative relationship between the independent effect of government size and political instability confirms the statement of state capacity theory that emphasises the strength of different aspects of state capacity, one of which is the financial capacity to prevent, eliminate and terminate political instability (Fjelde and De Soysa, 2009). Non-profit considerations that drive a government operation are more important in stabilizing the political environment. The empirical results represent a departure from Taydas and Peksen (2012) who find no relationship between the two variables when political instability is measured by the onset of armed conflict.

The independent effect of government size is more important for stabilizing the political environment in oil than non-oil countries. In oil countries, a low level of democracy does not offer political channels for competition for public office or to satisfy yearning by interested parties for oil rents. Therefore, its size is more important in stabilizing the political environment than non-oil countries, in line with rentier state theory. Furthermore, its size is important to address the negative consequences of the Dutch Disease model on the labor market. Empirically, the results in oil countries are in conflict with empirical research that finds no relationship when political instability is measured in the form of armed conflict like Higashijima et al. (2014). Governments in non-oil countries can respond to public needs through several measurements, including tax cuts. Hence, in these countries enlargement of government size is not the only public option to response to such needs.

Government size is more effective in stabilizing the political environment in autocratic than democratic countries. In democratic countries its size serves both political and economic objectives as stated by the political and economic hypothesis. Economically, it aims to address issues such as income inequality and ethnic fractionalization (see, for example, Alesina et al. 1999, 2000). Politically, it aims to please some segments of the public so as to enhance re-election prospects. However, it is expected that political inclusion in these countries place restrictions on governments to enlarge their size for non-productive considerations.

Government size has a lower stabilization effect in the MENA than non-MENA region. It might be that its size in the MENA region increases but does not bring corresponding improvement in quantity and quality of public goods and services. Alternatively, its bloated size may have an adverse impact on economic growth and institutional quality. Therefore, the marginal stabilization impact of its independent effect is deleterious by its adverse impact on other aspects.

4.14.1.1 Contribution

The independent effect of government size on political instability examined in this study is distinct to past empirical research in several aspects. There is a lack of studies in the empirical research that measure the effect of government size in reducing political risk using financial measurements. The author of this study came across only two empirical research studies, namely Taydas and Peksen (2012) and Higashijima et al. (2014), who investigate the relationship between different types of government

expenditure and political instability. Both studies can be criticized for measuring political instability in the form of severe incidences like armed conflict, which as mentioned in Chapter 2, is an inappropriate proxy. Taydas and Peksen (2012) investigate the impact of government expenditure on political instablity in a panel data set without distinguishing between countries; while Higashijima et al. (2014) focus on oil countries. The present study, by using a broad proxy of political instability and several sub-samples, shows that government size is important in stabilizing political environment under different sub-samples. The present study finds that the independent effect of government size has a negative and a significant relationship with political instability in countries where the percentage of youth bulge more than 30%, non-oil countries and autocratic countries. The fact that this importance is higher in autocratic than democratic countries might be due to the fact that better living standards can reduce public demand to move to democracy.

4.14.2 The Joint Effect of Government Size and Youth Unemployment on Political Instability

The second hypothesis assumes that the impact of unemployment on political instability is lower in countries with a larger government size. The empirical results confirm the hypothesis in the case of countries with less than or equal to 30% of youth bulge among its population and democratic countries; whereas the interaction effect of unemployment dominates the impact of the joint effect on political instability in panel data analysis, countries with more than 30% youth bulge, oil and non-oil countries, autocratic countries and the MENA region.

The negative relationship between the joint effects and political instability in democratic countries and countries where the percentage of youth bulge is less than or equal to 30% among the population suggests that a larger size of government lowers the risk of unemployment on political environment. In these countries, it could be that the enlargement of government size achieves dual objectives. It reduces the unemployment rate among youth and it constitutes improvement of public goods and services. Under such conditions, government size satisfies the majority of the public. The empirical results in democratic countries confirm the assumption of the political and economic hypothesis that government size is used in democratic countries to create public employment (among other objectives) in order to gain votes and satisfy supporting constituencies (Carmignani, 2009).

The positive relationship between the joint effect and political instability in panel data analysis, countries with more than 30%, oil and non-oil countries, autocratic countries, and the MENA region suggests that government size fails to lower the risk of unemployment on political environment. The results suggest that using government size to absorb unemployment is viable when used to deal with unforeseeable circumstances like a sudden economic crisis; however, it is not a healthy option over the long run. This is because it constitutes a substantial cost on economic growth (Algan et al., 2002), institutional quality (Stevenson, 1992) and public educational attitudes (Alesina et al, 2000). As a result, public pressure on governments is intensified to act as employer of last resort. However, wage bill pressures and new needs and requirements produced by each level of economic development place restrictions on public finance and make it difficult for a government to enlarge its size to absorb unemployment.

4.14.2.1 Contribution

This study is the first to examine the impact of the joint effect between government size and unemployment on political instability using different sub-samples that cover a long period of time. The empirical results show that government size can lower the adverse impact of unemployment on political environment. The results find a negative and a significant relationship between the joint effect and political instability in democratic countries. Furthermore, the results find positive sign and significant coefficient of the joint effect in non-oil countries, autocratic countries and non-MENA regions, suggests that it might turn into a destabilization effect on political environment. This is because a government responds by addressing the outcome not the factors driving the unemployment rate up. Therefore, its size reaches an alarming level that has a negative impact on other aspects while unemployment continues to expose risk on the political environment.

4.14.3 The Joint Effect of Government Size and Corruption on Political Instability

The third hypothesis assumes that the impact of corruption on political instability is stronger in a country with a larger government size. The empirical results find support for the hypothesis in the case of oil countries. The joint effect is negative in non-oil countries, democratic countries, autocratic countries, countries where the percentage of youth bulge is both less than or equal to 30%, countries where their percentage more than 30%, the MENA region and panel data analysis. It suggests small government size lowers the impact of corruption on political instability.

The positive relationship between the joint effects and political instability in oil countries suggests that a large government enhances the impact of corruption on political instability. Government size and corruption are used in these countries to satisfy the public and interest groups, respectively; however, this speeds up the consumption of oil rents. Consumption of oil rents by current expenditure allocated to enlargement of government size and rent-seeking activities exaggerate their adverse impact on political environment in the event of a sharp and sudden fall in oil prices. Currently, oil producers are experiencing financial pressure at different levels due to a fall in oil prices in late 2013. The low prices have an instant adverse impact on political environment in countries with a large public sector and high level of corruption, such as Iraq and Venezuela. Other producers are forced to cut their capital expenditure in order to meet wage bills of the public sector, which further deteriorates poor economic growth. The results suggest that a projection of rent seeking theory of a stabilization effect of government size and corruption varies according to the level of oil prices and the level of economic development at each period of time. The positive association between corruption and government size is in line with the empirical findings of Jaimovich and Rud (2014) that massive unproductive employment in the public sector in Argentina increases the level of corruption and rent seeking because employees lack the required skills or a skills mismatch exists.

The negative relationship between the joint effect and political instability in non-oil countries, democratic countries, autocratic countries, countries where the percentage of youth bulge is both less than or equal to 30%, countries where their percentage more than 30%, the MENA region and panel data analysis suggests that small government size lowers the impact of corruption on political environment. Different factors might drive the negative joint effect across these sub-samples. In non-oil countries, it might be that small government size and a low level of corruption boosts economic growth, which in turns increases public revenue that can be used to stabilize a country further. In democratic countries, small government size and low level of corruption improves efficiency in delivering public goods and services, which increase public popularity. The empirical results in democratic countries confirm findings of Fjelde and Hegre (2014) and the argument made by Clapham (1982) cited by Arriola (2009), but are departure from other empirical research, like Manzetti and Wilson (2007) and the argument made by Leys (1965). In light of the adverse impact of the public sector and corruption on different aspects of society in the MENA region, reducing government size and a reduction in the level of corruption might create a more favourable economic

environment. Altough the joint effect is negative in countries based on the percentage of youth bulge among population, their political outcome is different. In countries where their percentage is less than or equal to 30% the joint effect reduces the positive relationship between the independent effect of government size and the independent effect of corruption with political instability. In countries where their percentage is more than 30% the joint effect enhances the negative relationship between the independent effect of government size and the independent effect of corruption with political instability.

4.14.3.1 Contribution

The study examines the impact of corruption moderated by the government size on political instability using different sub-samples over a long period of time. The results show that the independent stabilization effect of government size and corruption on political environment in oil countries, as suggested by rent seeking theory, can turn into a destabilization effect when their combined effect is considered. The results find a negative and significant relationship between the joint effect and political instability in countries where the percentage of youth bulge more than 30%, non-oil countries, autocratic countries, democratic countries, the MENA region and non-MENA region. In these sub-samples small government size lower the impact of corruption on political environment.

4.14.4 The Joint Effect of Government Size and Gross Tertiary Enrolment on Political Instability

The fourth hypothesis investigates the impact of the joint effect between gross tertiary enrolment and government size on instability, assuming that the larger the size of government in a country, the lower the impact of high gross tertiary enrolment on political instabiliy. The empirical results confirm the hypothesis in countries where the percentage of youth bulge is more than 30%, oil countries and the MENA region. In these sub-samples enlargement of government size reduces the positive relationship between gross tertiary enrolment and political instability.

The empirical results find a positive relationship between the joint effect and political instability in countries where the percentage of youth bulge is less than or equal to 30%, panel data analysis, non-oil countries, democratic and autocratic countries. In these sub-samples enlargement of government size and increases in gross tertiary enrolment enhances political instability. The link between the joint effect and

political instability results from imbalance in the growth rate of educated youth and demand for labor forces. A government enlarges its size to absorb educated youth in public employment; however, its growth rate falls behind the growth of educated youth. Under such conditions, a government cannot enlarge its size and the issues related to educated youth exposes risk on the political environment.

4.14.4.1 Contribution

This study tests the impact of gross tertiary enrolment on political instability moderated by government size, which has not been tested in past empirical research. It shows that a government can enlarge its size to reduce the positive relationship between gross tertiary enrolment and political instability. It finds a positive and significant relationship between the joint effect and political instability in panel data analysis, countries where the percentage of youth bulges less than or equal to 30%, non-oil countries and non-MENA region. In these sub-samples this option enhances political instability over the long run. This is because government size reaches an alarming level while the number of educated continues to accumulate.

4.14.5 The Joint Effect of Government Size and Trade Openness on Political Instability

The fifth hypothesis assumes that the impact of trade openness on instability is lower in countries where government size is large. The empirical results confirm the hypothesis in countries where the percentage of youth bulge is less than or equal to 30%, oil countries, democratic countries and the MENA region. This suggests that enlargement of government size lowers the adverse impact of a low level of trade openness on political environment. The positive joint effect is in line with the social insurance and economic hypothesis that states government size is used in some countries to reduce the impact of trade openness on political instability.

The joint effect has a negative relationship with instability in panel data analysis, countries where the percentage of youth bulge is more than 30%, non-oil countries, and autocratic countries. It indicates that small government size enhances the impact of low trade openness on political instability.

4.14.5.1 Contribution

The importance of government size in lowering the adverse impact of low trade openness on political environment tested in this study has not been investigated before

in the empirical literature. The results find that enlargement of government size has a significant impact to lower the effect of trade openness on political instability in countries where the percentage of youth bulge less than or equal to 30%, democratic countries and the MENA region. The results show that small government size has a significant impact to enhance the effect of trade openness on political instability in countries where the percentage of youth bulge more than 30% and autocratic countries.

4.14.6 The Joint Effect of Government Size and Urban Growth Rate on Political Instability

The sixth hypothesis assumes that the impact of urban growth rate on political instability is lower in a country where government size is large. The empirical results confirm the hypothesis in oil countries and the MENA region. In these countries large government size lower the impact of urban growth rate on political instability. In the MENA region, the empirical results do not confirm the argument made by Ross et al. (2011) that MENA experiences a rapid change in urban growth rate that creates pressure on the labor market. The results are in line with empirical research that finds a negative association between urban growth rate and political instability such as Collier and Hoeffler (2002, 2004).

The joint effect has a positive relationship with political instability in panel data analysis, countries where the percentage of youth bulge is more than 30%, countries where their percentage is less than or equal to 30%, democratic and autocratic countries and non-oil countries. This suggests the failure of government to enlarge its size enhances the adverse impact of high urban growth rate on political environment. Urban growth rate can stabilize the political environment by concentrating a significant percentage of the population in a small geographic area. This enhances government efficiency in delivering public goods and services and monitoring of the public. However, its rapid growth rate and the many goods and services associated with it enhance instability when government size lags behind the urban growth rate. Azam (2001) and Fjeldeand and De Soysa (2009) point out that the failure of government to enlarge its size to respond to public needs leads to instability. Empirically, this is in line with the findings of Kraay and Van Rijckeghem (1995) that a high level of rural-urban migration increases demand on infrastructure, education and employment opportunities.

4.14.6.1 Contribution

This study examines the impact of urban growth rate on political instability moderated by government size, which has not yet been tested by past empirical research. The empirical results find a positive and significant relationship between the joint effect and political instability in panel data analysis, countries where the percentage of youth bulge less than or equal to 30%, non-oil countries and the non-MENA region. The results find a negative and significant relationship between the joint effect and political instability in oil countries.

4.14.7 The Joint Effect of Government Role and Youth Unemployment on Political Instability

The seventh hypothesis assumes that the impact of unemployment on instability is lower in a country where the role of government is large. The empirical results confirm the hypothesis in oil countries, autocratic countries, and the MENA region. This indicates that expansion in the role of government lowers the political risk of unemployment. Further education at secondary and post secondary levels enhances the opportunities for the unemployed to find employment (Riddell and Song, 2012). Education can be used as an alternative to employment to lower the risk of unemployment on political environment. This gives a government time to improve the prevailing economic environment so that it becomes more responsive to employment requirements. In some countries a government reach an agreement with the private sector to hire youth enrolled in vocational training financed by government.

The joint effect has a positive relationship with political instability in panel data analysis, non-oil countries, and democratic countries. It suggests that government expenditure on education fails to lower the impact of unemployment on political instability. The results suggest this might be because unemployment results from the economic conditions in a country rather than skills mismatch between skills attained from education and those required in labor markets. Hence, further expenditure on education constitutes waste of public resources while youth unemployment continue to exposes risk on political environment. Alternatively, it might be that unemployment is caused by skills mismatch; however, the level of expenditure is insufficient to cover all unemployed or when the level of skills mismatch is significant and requires significant investment in re-training.

Expenditure on education might or might not waive the political risk of unemployment as the empirical results show. However, it gives a government time to investigate the determinants of unemployment and work to settle those that contribute most significantly. Furthermore, it is more feasible than enlarging government size to absorb unemployment that establishes a long-term financial commitment by governments and has negative consequences.

4.14.7.1 Contribution

This study investigates the impact of unemployment moderated by government expenditure on education as an alternative to the effect of government size on political instability. The joint effect has not previously been tested in the empirical literature. The present study finds a negative and significant relationship between the joint effect and political instability in oil countries.

4.14.8 The Joint Effect of Government Role and Urban Growth Rate on Political Instability

The eighth hypothesis assumes that the impact of urban growth rate on instability is lower in a country where the government role is large. The empirical results confirm the hypothesis in panel data analysis, oil and non-oil countries, democratic and autocratic countries. This suggests that more expenditure on education lowers the adverse impact of urban growth rate on political instability. Government expenditure on education eliminates the political risk from one channel of rapid urban growth rate (see, for example, Kraay and Van Rijckeghem, 1995, Urdal, 2006 and Turchin, 2013).

The joint effect has positive relationship with political instability in the MENA region. It suggests that urban growth rate enhances its impact on political instability when expenditure on education is small. It might be that while a government meets the demand for educational opportunities it fails to meet other requirements like infrastructure.

A rapid urban growth rate produces different needs and requirements, one of which is education. Increasing expenditure on education alongside meeting other needs and requirements enhances political stability. However, expenditure on education without considering other needs has an adverse impact on political environment. This is

because it might drive rural-urban migration up and create pressures on other infrastructure.

4.14.8.1 Contribution

The mitigation effect of expenditure of education on political risk of urban growth rate is not examined by past empirical literature. The present study finds a negative and significant relationship between the joint effect and political instability in panel data analysis, non-oil countries and non-MENA region. It finds a positive and significant relationship between the joint effect and political instability in MENA region. This suggests failure of governments in the region to response to one need associated with rapid urban growth rate.

4.15 Future Research

The first and most prominent suggestion is to investigate the impact of government size on political instability using an alternative proxy of government size. This study measures it as the percentage of government consumption to GDP; however, this has limitations. The size might inflate or deflate by the size of GDP. In some countries the percentage could be high because of small GDP and vice versa. An alternative proxy is considered here; however, poor data quality and insufficient number of observation for developing countries restricts further investigation[429].

One prospective future research area is to identify the channel(s) that link an oversized public sector to political instability. Empirical results show that the government sector either has a stabilization or destabilization effect on political environment. The literature points out that the effect goes through several channels, such as institutional quality, economic growth, and pressure on public finance, which all need to be verified empirically. The choice of channel helps a government to enlarge its size to eliminate its adverse impact on other aspects.

Future research might investigate the impact of government size on political instability in countries with a high level of capital expenditure and low level of current expenditure versus countries that have a high level of current expenditure and low level of capital expenditure. Enlargement of government size by creating public employment might come at the expense of expenditure on other sectors like infrastructure. In some

[429] Alternative proxies considered in this research are the percentage of public employees to total employment, the ratio of public employees to total population, the percentage of wage bill to total government consumption and the percentage of wage bill to total revenue.

countries government enlarges its size to address several determinants of political instability; however, it exaggerates risks associated with shortages in water and electricity supply (for example).

In expenditure on education and political instability, future research might use an alternative proxy like expenditure on education per capita. The proxy used in this research, which is expenditure on education to GDP, has a limitation in that it does not consider the number of students. It might be that the growth rate in expenditure falls behind the growth rate of the number of students. This leads to a low level of education expenditure per capita. The second direction is to investigate the impact of expenditure per capita at each educational level on instability in countries based on their level of economic development. For example, it is expected that expenditure on education at each educational level respond to the level of economic development. Similarly, countries where the dependency ratio is high spend more on educational levels equivalent to this group of population.

4.16 Policy Implications

This study investigates the relationship between government size and government role on the one hand and political instability on the other hand. It assumes that a government can lower the adverse impact of some factors on the political environment. The empirical results confirm the assumption in some sub-samples; however, in other sub-samples a government size enhances the impact of these factors on political instability. This suggests that government size is an unsustainable option and aggressive reliance on it to enhance stability might lead to instability. Hence, policy makers need to improve factors that initiate instability in the first instance. By doing so, a government can successfully create common interests with the public to enhance stability.

Policy makers need to improve factors that reduce public pressure on a government to act as employer of last resort. They need to create favorable economic environments that generate employment opportunities. Financial pressure and other factors restrict a government's ability to continue to act as employer of last resort. From general reading of the author of this study, Tunisia and Egypt used government size to absorb unemployment among youth; however, over the long run it created financial pressure to meet wage bills and unemployment continued to entail significant risk on political environment. Financial pressure can be observed even in wealthy countries like Kuwait, where the government faces challenges to meet the wage bill that is expected to reach

70% of the public budget and at the same time needs to continue to act as employer of last resort for new entrants into the labor market.

Creating favorable economic environment enhances the role of the private sector on economic growth; consequently in creation of employment opportunities. This helps a government to allocate financial resources from inefficient distribution channel like public employment as indicated by the literature to other area that is much needed to enhance and sustain economic growth like building and maintaining the infrastructure.

Policy makers need to turn education from a prospective source of instability into a source of prosperity. It leads to instability due to small economic size, low growth rate, skills mismatch and the failure of government to absorb educated youth in the public sector. Policy makers can turn education into a source of prosperity through aligning skills attained from educational system with the skills required by the international labor market. This releases pressure on the domestic labor market and turns educated youth into an instrument to generate foreign currency and a channel with which to transfer knowledge from the international to domestic arena. From general reading of the author of this study, domestic labor working in international markets constitutes a major source of foreign currency in countries such as Jordan and the Philippines.

This study sheds light on the importance of government size and its role to relax pressure on employment and educational opportunities associated with rapid change in urban growth rate; however, other emergent needs and requirements are equally important to stabilize political environment. The failure of government to provide infrastructure or encourage the private sector to do so has adverse effects on its success in addressing the shortage in employment and educational opportunities. For example, the living standards of the public are negatively affected when demand for housing exceeds supply and a significant amount of household income is directed to accommodation expenses. Similarly, stability enhances when the supply of electricity, water, entertainment facilities, and so on match a rapid urban growth rate. In summary, in order for government to eliminate the adverse effect of rapid urban growth rate it should set a plan to address its multidimensional needs and requirements.

Chapter 5

Conclusion and Further Research

5.1 Introduction

This thesis investigates factors that enhance or reduce the risk of political instability. It is a departure from past empirical work in several aspects. It investigates the role of youth bulge[430], corruption and government size on political instability moderated by other determinants of political instability that have received less attention in past empirical research. It uses a broad measure of political instability that includes minor and major incidences, unlike past empirical literature that tends to measure political instability by outbreaks of civil war, which is a relatively rare incidence. It examines the impact of joint effects on political instability in panel data analysis covering a period from 1984 to 2013. The four sub-samples considered are: OECD countries, democratic countries, oil countries, and the MENA region. The results are estimated using 2SLS to deal with endogeneity issues unlike past empirical research that tends to measure the dependent variable using a dummy variable. The hypotheses tested and main results are presented in the following sections. These hypotheses are, of course, discussed in greater detail in the respective substantial chapters.

5.2 Chapter 2: The Role of Youth Bulge in Enhancing Political Instability

The second chapter examines the role of youth bulge on political instability moderated by unemployment, economic growth, level of democracy, educational attainment, and rents from natural resources.

The empirical results confirm the first hypothesis that youth bulge enhances political instability in all sub-samples except MENA and oil countries. The institutional structure in OECD countries lowers the impact of youth bulge on political instability. In OECD countries there are better opportunities including more educational opportunities at university level, whereas in non-OECD countries young people's concerns are driven by a demand to improve basic living standards and/or more income equality. Democratic countries face a higher youth bulge risk than autocratic countries. The

[430] The term 'youth bulge' is widely used to refer to a high proportion of the population being in a youthful age group. In this thesis no arbitrary line is drawn to say whether, or not, there is a 'youth bulge' in a given country. Rather, the term youth bulge is used here to denote a variable that measures the proportional size of a youthful age group. Earlier in this thesis the details of this variable are specified and discussed.

higher risk in democratic countries might be as a result of immature democracy[431], high level of media coverage of youth dissatisfaction or the failure of government to meet youth expectation.

The empirical results find support for the second hypothesis that higher the economic growth the lower the role of youth bulge as a cause of political instability. The influence of economic growth is equally important in countries where the percentage of youth bulge is 23% as is the case in OECD countries or where youth bulge percentage is more than 30% as is the case in non-OECD countries. Furthermore, it is equally important in democratic and autocratic countries, oil and non-oil countries and in the MENA region. In panel data analysis, positive income growth enhances political stability through increasing the individual's opportunity cost of committing politically destabilizing acts. In oil countries economic growth is more important than in non-oil countries because it is driven by government expenditure that depends on oil prices. The recent fall in oil prices has caused reductions in government expenditure, which has an adverse impact on all related economic activities. This has decreased the level of employment opportunities, either created by the public or private sectors, which has exacerbated political instability. Also, inflation rates have increased as a result of increases in government fees to offset the adverse impact of low oil prices.

The results suggest that high economic growth decrease the chances of youth-driven political instability. A country can lower the political risk of youth bulge through creating a favorable economic environment. Such an environment offers youth a channel to reap economic benefits rather than allocating their time and effort to engage in political direct action. The middle-income segments of the population produced by economic growth enhance political stability. Furthermore, a government increases its revenue as a result of stimulating economic growth. This revenue can be used to enhance stability further by increasing expenditure on public welfare such as education, health services, and other social services.

The third hypothesis, that the impact of youth bulge on political instability is stronger when young people experience unemployment, finds empirical support in MENA and OECD countries. However, the dissatisfaction is expected to go through political channels in OECD countries; while in the absence of such channels in the

[431] While illiberal immature democracies have more-or-less free and fair elections, they do not have the institutions associated with liberal democracy (such as a free press) and governments frequently engage in cronyism and corruption.

MENA region there is the likelihood of violence. In OECD countries, a government failure to reduce unemployment rate sparks youth anger and the public who might be affected by an increase in crime rates, resulting from unemployment. In democratic countries (particularly those that are chaotic and immature) some interested parties might provoke encourage unemployed youth to act against a government. In the MENA region, unemployed youth cannot gain access to some services and the absence of financial support for the unemployed prevent unemployed youth from achieving financial independence. In addition, in an environment where patronage and cronyism are rife, an unemployed person might feel held back by their position in society and hence feel very pessimistic and resentful.

The empirical results do not find support of the relationship between the joint effect of youth bulge and unemployment on political instability in panel data analysis, oil and non-oil countries and autocratic countries. In panel data analysis, it might be that some governments absorb unemployment by creating massive public employment. This increases wage expenditure with adverse impacts on a government's ability to meet public requirements of public goods and services such as education and health care. This shifts the political risk from unemployed youth to the insufficient quantity and quality of public goods and services. In oil countries, oil rents are used to create public employment and attract investors to establish projects so that the risk of unemployment is abolished.

The fourth hypothesis is that the higher the level of democracy the lower the impact of youth bulge on political instability. Contrary to initial expectations, moving towards democracy enhances the impact of youth bulge on political instability across all sub-samples. In panel data analysis, an improvement in democracy is likely to enhance the role of youth bulge in a country where there are unfavorable socioeconomic conditions, such as a low level of educational attainment, a poor economic environment and a high level of ethnic segmentation. In OECD countries the cause and outcome of political instability are different to that in non-OECD countries. In OECD countries, the failure of government to protect living standards and employment opportunities can lead to instability in the forms of disruptive new political movements, riots and demonstrations that typically lead to political change. In non-OECD countries the transition from autocracy to democracy enhances frequently violent political instability. Moving towards democracy in oil countries and the MENA region places the incumbent

governments under public scrutiny, which restricts their ability to use different strategies, like patron-client networks, to stabilize aspects of the political environment.

The fifth hypothesis is that a high level of gross tertiary enrolment enhances the impact of youth bulge on political instability. The empirical results confirm the hypothesis in MENA and oil countries. In the MENA region, a high level of government involvement in labor markets and a low level of democracy prevent young people from achieving their education-induced expectations in terms of employment and political opportunities. In oil countries, expenditure on education is used as a distribution channel rather than to meet economic needs. This produces a large number of educated youth who face difficulty especially because there is a lack of diversification in economic activities as a result of the Dutch disease.

The sixth hypothesis assumes that the higher the rents from natural resources the lower impact of youth bulge on political instability. The empirical results confirm the hypothesis in panel data analysis; whereas, in the MENA region it is positive. In the MENA region corruption and rent-seeking activities consume a substantial amount of oil rents and leave little or no room to satisfy youth bulge needs and requirements.

The second chapter provides a general framework about the role of youth bulge on political instability moderated by other factors; however, the importance of each joint effect depends on each country's circumstances. For example, the empirical results in the MENA region show that the role of youth bulge on political instability hinges on other factors such as economic growth, labor market, and educational attainment.

5.2.1 Chapter 2: The Role of Youth Bulge in Enhancing Political Instability - Contribution to Knowledge

This chapter contributes to the literature in several aspects. It provides support that the role of youth bulge on political instability not being limited to large-scale incidences of instability like civil war, as measured by past empirical literature. It examines the role of youth bulge on political instability moderated by economic growth, unemployment, level of democracy, education and rents from natural resources. The joint effect between economic growth, level of democracy and education are examined by Urdal (2006); however, the author measures political instability in the form of civil war in panel data analysis without considering the variation in the percentage of youth bulge or the socioeconomic and political environment. The chapter fills the gap by examining the role of youth bulge and their impact moderated by other factors on

political instability in panel data analysis, OECD countries, oil countries, democratic countries and the MENA region. These sub-samples show significant variation in the percentage of youth bulge and other determinants of political instability. Furthermore, it uses an alternative measure of political instability that considers small and large incidences of political instability.

5.2.2 Chapter 2: The Role of Youth Bulge in Enhancing Political Instability - Future Research

Future research can investigate the effect of the private sector, educational level, democracy, and educational system in the role of youth bulge on political instability. It can potentially investigate the variation in the level of political instability between countries that have the same percentage of youth bulge; however, they are differing in socio-economic and political environment. In the private sector, it can investigate the role of youth bulge on political instability in countries that have successful entrepreneurship versus countries that have capital-intensive projects. With educational level, it can examine the variation on political instability based on the educational level of unemployed youth. With democracy, it can examine the variation in the impact of youth bulge moderated by the level of democracy on political instability in countries that have a similar percentage of youth bulge but at different levels of economic development. Concerning the educational system, it can investigate the role of youth bulge on political instability in countries with high quality educational systems versus poor quality. Alternatively, it can investigate their impact on instability in countries that include developing civic skills in the educational curriculum versus countries that do not.

Future research can investigate the impact of youth bulge on other aspects of society rather than political instability. It can investigate the impact of youth bulge in moving from autocracy to democracy as examined by Wilson and Dyson (2017). Likewise, other research points to a possible relationship between demographic transition and international relationships that goes through economic growth and political instability as indicated by Kugler (2017). Similarly, recent research investigates the determinants of immigration among other factors in demographic transition as examined by Tuccio (2017). Other research investigates the impact of unemployed youth on crime rate as examined by Namuggala (2017).

5.2.3 Chapter 2: The Role of Youth Bulge in Enhancing Political Instability - Policy Implication

Generally, the empirical results show that socioeconomic and political factors can moderate the role of youth bulge as a causal factor for political instability. Hence, public policy needs to create a favorable economic environment and educational system in order to turn youth bulge from a demographic curse into a demographic dividend. Furthermore, improvement in these areas should proceed moving to democracy.

5.3 Chapter 3: Does Corruption Enhance Political Instability?

The third chapter examines the impact of youth bulge, youth unemployment, and educational attainment on political instability moderated by corruption. The measure of corruption used in the chapter considers bureaucratic and political corruption; however, more attention is given to the latter.

The first hypothesis is that the independent effect of corruption enhances political instability. The empirical results support the hypothesis; however, it has less of an effect in OECD than in non-OECD countries, democratic than in autocratic countries, oil than in non-oil countries and in the MENA than in non-MENA region. In OECD and democratic countries, it is used to stabilize the political environment through meeting the requirements of interest groups; however, it turns into a destabilizing factor when discovered by the public. In autocratic countries, it has adverse impacts on public living standards and with the absence of democratic and legal channels to fight it; it contributes to latent or actual political instability. In oil countries, oil rents offer a government an instrument to lower its adverse impact on the public; while the public in non-oil countries pays much of the cost of corruption through taxes and its adverse impact on their living standards. In the MENA region, it creates common benefits between the public and government that lowers its impact on political instability.

The empirical results confirm the second hypothesis that corruption enhances the adverse impact of youth bulge on political environment. However, the joint effect exposes lower risk in non-OECD than in OECD countries, democratic than in autocratic countries, non-MENA than in MENA region and in oil than in non-oil countries. In panel data analysis, interest groups who are unhappy with their gains from corruption activities or who have accumulated financial resources organize desperate youths to act against a government. In OECD countries political channels and public sensitivity to corruption enhances mostly non-violent instability in these countries when corrupt

transactions are observed. Furthermore, it enhances instability when incumbents satisfy private interest groups at the expense of the public. In democratic countries, dissatisfied interest groups from the distribution patterns of corruption benefits organized youth suffered from its adverse impact on their lives act against a corrupt government. In autocratic countries, the young commit acts of violence because of their failure to be able to make their way in a corrupt society that is controlled by relatively few interest groups. In the MENA region, with a high percentage of youth bulge, a high level of corruption and a low level of democracy, there is a favorable breeding environment for anti-government groups to organize youth against the government. In oil countries, oil rents offer government financial resources with which to satisfy interest groups including young people, which enhance political stability (even though beneath the surface there may be unobservable latent instability).

The third hypothesis is that corruption enhances the adverse impact of unemployment on political environment. The empirical results find that the joint effect exposes higher political risk in OECD than in non-OECD countries, in democratic than in autocratic countries and in the MENA than in non-MENA region. In OECD countries incumbent governments come under public pressure to reduce unemployment and corruption, and its failure to respond to such demands enhances instability. In the MENA region, high levels of corruption and absence of checks and balances in the region lead to the best employment opportunities going to those with the right connections. The empirical results do not find support for the impact of the joint effect on political instability in oil and non-oil countries.

The fourth hypothesis is that corruption enhances the adverse impact of a high level of gross tertiary enrolment on political environment. The empirical results confirm the hypothesis in autocratic countries, the MENA region and oil countries. In autocratic countries a government comes under full control of a narrow ruling clique. This has adverse impacts on economic growth and employment opportunities to absorb educated youth. In MENA corruption leads to poor labor market conditions, and as a result growth in employment opportunities do not keep pace with increasing numbers of educated youth. Furthermore, low levels of democracy fail to accommodate civic skills produced by high levels of educational attainment. In oil countries, an increase in educational attainment creates pressure on poor labor market condition as a result of the Dutch disease. It creates pressure on political systems that lack the appropriate channels to accommodate civic skills of educated youth.

The joint effect of gross tertiary enrolment and corruption has a negative impact on political instability in panel data analysis, OECD countries, non-OECD countries, democratic countries, and non-oil countries. In these countries a low level of gross tertiary enrolment lowers the adverse impact of corruption on political environment. In panel data analysis, low levels of educational attainment constitute a lack of knowledge and civic skills among youth to observe corrupted transactions. In OECD countries, education restricts a government's ability to stabilize the political environment through political corruption. In democratic countries, a low level of gross tertiary enrolment has adverse impacts on different aspects of government performance, which in turn reduces public support. However, lack of knowledge and skills as a result of low gross tertiary enrolment lowers the adverse impact of corruption on the political environment. In non-oil countries low educational attainment constitutes reductions in public revenue and restrictions on improving public finance. This reduces a government's ability to satisfy public needs, which enhances instability.

5.3.1 Chapter 3: Does Corruption Enhance Political Instability? Contribution to Knowledge

The chapter examines the independent effect of corruption on political instability. Furthermore, it examines the impact of youth bulge, unemployment, and gross tertiary education moderated by corruption on political instability. The joint effect between corruption and other factors has received less attention in the empirical research. There is only one empirical study that examines the impact of the joint effect between youth bulge and corruption on political instability, namely Farzanegan at el. (2014); however, the authors examine the impact of the joint effect in a panel data analysis set covering a period from 2002 to 2012. The chapter differs to that study by using an alternative proxy of political instability and examining the impact of the joint effect on political instability in several sub-samples. The joint effect between corruption and unemployment and corruption and education has not been tested in past empirical research. Furthermore, the chapter is distinct from other research in the nexus of corruption and political instability. It uses a proxy of corruption that measures its political risk and it uses a broad measure of political instability. It examines its impact on the political environment unlike past empirical literature that measures its impact on economic growth, government performance, and public welfare. It examines its impact on the political environment in panel data analysis, OECD countries, oil countries, democratic countries, and the MENA region over period from 1984-2013. These sub-

samples show variation in the level of corruption, the percentage of youth bulge and socioeconomic and political environment.

5.3.2 Chapter 3: Does Corruption Enhance Political Instability? Future Research

The empirical results suggest several directions for future research. The lower effect of the independent effect of corruption in oil countries and the MENA region need further investigation. Similarly, the lower effect of youth bulge and youth unemployment moderated by corruption on political instability in oil countries needs further investigation. Furthermore, future study might investigate the impact of the joint effect of youth bulge and corruption on political instability in oil countries based on oil production per capita or oil reserves per capita. Alternatively, it might investigate the impact of the joint effect between corruption and repression on political environment in oil countries. It can investigate the relationship between corruption and political instability in the MENA region and oil countries using variables measuring the satisfaction of interest groups.

Other future research into the unemployment-corruption nexus can examine the impact of the joint effect on political instability between countries that have high levels of corruption and unemployment, and countries with low levels of corruption and high unemployment. It can investigate its impact using an alternative measure of unemployment like unemployment to total labor force.

With regard to the education-corruption nexus, future research can investigate the impact of each educational level on political instability moderated by the level of corruption. Alternatively, it can investigate the joint effect between education quality, such as a country's performance in maths and science worldwide.

It can investigate the independent impact of corruption and its joint effect on political instability in countries where corruption is a common norm versus countries where it is non-common. Alternatively, it is possible to investigate the variation in the level of political instability based on the type of corruption, like petty corruption versus grand corruption.

Further research can investigate the impact of corruption on political instability that goes through different channels. It can investigate its impact on political instability through increasing outward immigration in a country as examined by Poprawe (2015). Corruption can enhance political instability through its adverse impact on efficiency of

government expenditure (Castro, Guccio, and Rizzo, 2014). Other areas that might link corruption to political instability might go through human capital, political legitimacy and political rights (Dimant and Tosato, 2017).

5.3.3 Chapter 3: Does Corruption Enhance Political Instability? Policy Implication.

Strategies to fight corruption either at the political or bureaucratic levels requires strong political will; otherwise they fail to reduce corruption. Improving living standards, increasing predictability, and clarity of bureaucratic procedures and automation of government can reduce bureaucratic corruption. Political reforms that install democracy and work in parallel with economic reform lower the level of political corruption. Policy makers can enhance an individual and community role in fighting both type of corruption. An individual role enhances when the education system helps her/ him to distinguish between public and private rights; while, the community role enhances by increasing the level of transparency in allocation of public expenditure.

5.4 Chapter 4: Does Large Government Size Play a Crucial Role in Subsiding Political Instability?

In the fourth chapter, it is hypothesized that a government can play an important role to mitigate or diminish the role of youth bulge on political instability through enlarging its size or expanding its role. Hypotheses examine the impact of youth unemployment, corruption, educational attainment, trade openness, and urban growth on political instability moderated by government size. Also, they investigate the impact of youth unemployment and urban growth rate on political instability moderated by the government role. The OECD countries sub-sample is replaced by a sub-sample of countries where the percentage of youth bulge is less than or equal 30% and hence there is also a sub-sample made up of countries where their percentage is more than 30%. The independent effect of government size and role has a negative relationship with political instability. Increasing government size or expanding its role has a stabilization effect on political environment across all sub-samples.

The second hypothesis is that the larger the size of government in a country the lower the impact of unemployed youth on the political instability. The results confirm the hypothesis in countries where the percentage of youth bulge is less than or equal to 30% and democratic countries. In these countries enlargement of government size address youth unemployment and satisfy general public needs and requirements which

breed stability. Enlargement of government size enhances the impact of unemployment on political instability in panel data analysis; countries with a youth bulge percentage more than 30%, oil countries and the MENA region. The positive joint effect might be attributed to the fact that absorbing unemployment through public employment creates pressure on governments to create further public employment; otherwise, it leads to instability.

The third hypothesis is that a large government size enhances the impact of corruption on political instability. The empirical results confirm the hypothesis in oil countries. In oil countries a large government size and high level of corruption speed up the consumption of public resources, which in turn enhances political instability over the long run.

The joint effect of corruption and government size has a negative relationship with political instability in panel data analysis, countries where the percentage of youth bulge is less than or equal to 30%, countries where their percentage is more than 30%, democratic countries, autocratic countries, non-oil countries and the MENA region. The results suggest that minimizing government size lowers the impact of corruption on political instability. In panel data analysis, countries choose to hire qualified human resources at high wage levels to lower the level of corruption. In countries where the percentage of youth bulge is less than or equal to 30% a government reduces its size and decreases the level of corruption to enhance its popularity among the public. In countries where the percentage of youth bulge is more than 30% the joint effect enhances the adverse impact of the independent effect of small government size and low level of corruption on the political environment. It might be that these countries have limited financial resources so that they can neither enlarge the government size to satisfy the public nor offer rent seeking opportunities for interest groups. In non-oil countries, government reduces its size and brings corruption down because it wants to please the majority of the public. In the MENA region downsizing a government size lowers the adverse impact of corruption on public living standards, which enhances political stability.

The fourth hypothesis is that the larger the size of a government in a country the lower the impact of gross tertiary education on political instability. The empirical results confirm the hypothesis in countries where the percentage of youth bulge is more than 30%, oil countries and the MENA region. The results suggest that government size lowers the political risk of a high level of gross tertiary enrolment on the political

environment. In oil countries oil rents enable a government to absorb educated youth in the government sector in response to increasing numbers of educated youth and poor labor market conditions in order to lower the risk of political instability. In the MENA region the size of government is enlarged to absorb educated youth with skill mismatches between labor market requirements and skills attained from the educational system.

The joint effect of gross tertiary enrolment and government has a positive relationship with political instability in panel data analysis, countries where the percentage of youth bulge is less than or equal to 30%, non-oil countries, autocratic and democratic countries and non-MENA region. The results suggests enlargement of government size and increasing the level of gross tertiary enrolment enhances political instability. In panel data analysis, wage bills create pressure on government size while the number of educated youth continues to grow, which enhances political instability. In countries where the percentage of youth bulge is less than or equal to 30%, they achieve a high level of gross tertiary enrolment that exceeds labor market requirements and government size cannot enlarge further, which enhances political instability. In non-oil countries enlargement of government size comes at the expense of capital expenditure. As a result it reduces employment in the private sector and creates an educational preference that prefers public over private sector employment. This creates pressure on government to continue to act as employer of last resort; otherwise instability would be increased. In democratic countries the small demographic proportion of young people increases competition over human resources between the private and public sector, which drives their wages up. This hurts the private sector's ability to hire educated youth and pay taxes, which in turn reduces public revenue. Furthermore, shortages in human resources lead to poor economic growth, increase the wage level, and prevent establishment of new business.

The fifth hypothesis is that the larger the size of a government in a country the lower the impact of trade openness on political instabiliy. The empirical results confirm the hypothesis in countries where the percentage of youth bulge is less than or equal to 30%, democratic countries, oil countries and the MENA region. In countries where the percentage of youth bulge is less than or equal to 30% it might be that a government succeeds in absorbing unemployment resulting from poor economic growth, because youth constitute on average around 21.5%. In oil countries, high levels of exposure to

international oil prices forces a government to have a large government sector to lower the adverse impact of trade openness on political environment.

The joint effect between trade openness and government size has negative relationship with political instability in countries where the percentage of youth bulge is more than 30%, non-oil countries, autocratic countries and non-MENA region. The results suggest that a government size fails to lower the impact of trade openness on political instability. In panel data analysis the failure of government to enlarge its size in response to a low level of trade openness lowers employment opportunties. This reduces the level of consumption which hurts the profitability of the private sector. In non-oil countries, a government faces difficulty to enlarge it is size amidst low levels of trade openness because it might increase taxes on the private sector. This increases the cost on the sector and causes inherent difficulty in coping with low levels of trade openness.

The sixth hypothesis is that a larger government size lower the impact of urban growth rate on political instability. The empirical results confirm the hypothesis in oil countries and the MENA region. In oil countries enlargement of government size meets the needs and requirements of rapid urban growth and lowers the potential political risk from low urban growth rate. In the MENA region, governments play an important role as provider of public goods and services so that enlargement of government size in response to urban growth rate is more feasible from an efficiency point of view and a security perspective.

The joint effect between urban growth rate and government size has a positive relationship with political instability in panel data analysis, countries where the percentage of youth bulge is less than or equal to 30%, countries where their percentage is more than 30%, non-oil countries, democratic and autocratic countries and non-MENA region. This suggests that a government size fail to lower the impact of urban growth rate on political instability. The impact of rapid urban growth on the political environment is higher in countries where the percentage of youth bulge is less than or equal to 30% compared to countries where their percentage is more than 30%. It might be that governments in the former countries meet some requirements of urbanization; however, many are not met. In non-oil countries a government might satisfy people's needs associated with urbanization, but be unable to provide much needed infrastracure which can spark public anger against it. In democratic countries, a government might enlarge its size to respond to income inequality without improving the quantity and

quality of public goods and services. This sparks public anger against government because they do not receive services and goods equivalent to what they paid in taxes.

The eight hypothesis is that larger the government role the lower the impact of urban growth rate on political instability. The results confirm the hypothesis in oil countries, autocratic countries, and the MENA region. It suggests that a government role lowers the impact of unemployment on political instability. In autocratic countries investment in education reduces the risk of unemployed youth with regards to the political environment. Investing in education in these countries stabilizes the political environment through stimulating economic development, which lays a foundation to move towards democracy in the future. In the MENA region countries can waive the risk of youth unemployment over the short run by expanding a government's role. This gives governments in the region a period of time in which to work on mitigating underlying factors that lead to high unemployment.

The joint effect between expenditure on education and unemployment has a positive relationship with political instability in panel data analysis, non-oil countries, democratic countries, and non-MENA region. The results suggest that expenditure on education fail to lower the impact of unemployment on political instability. In panel data analysis, expanding educational opportunities to deal with unemployment has a stabilization effect over the medium term; however, it has a destabilization effect over the long run as economic size fails to absorb increasing numbers of educated youth. In non-oil countries using educational opportunities to absorb unemployment inhibits the private sector's ability to create employment over the long run; hence political instability is exacerbated by educated youth who experience difficulty finding employment opportunities. In democratic countries there is no shortage of qualified youth as the percentage of gross tertiary enrolment is high at around 40% so that government might consider re-allocation of expenditure on education to improve conditions in the labor market

The ninth hypothesis is that the larger the role of a government in a country the lower the impact of urban growth rate on political instabiliy. The results confirm the hypothesis in all sub-samples except the MENA region. In panel data analysis expanding educational opportunities reduces pressure on educational institutions and provides society with the human resources required to meet the needs and requirments of the public, as suggested by Wagner law. Oil countries can increase the expenditure on education to lower prospective political risk from low urban growth rate. Rent

seeking theory states that its low rate increases the political risk because of oil rents and expensive equipment located in remote areas. Hence, attracting a rural population to move to urban areas offer opportunities for a government to control the public. The joint effect has a positive sign in the MENA region; it suggests that enlargement of government size enhances the impact of urban growth rate on political instability. In the region it might be that oil rents speed up the level of rural-urban migration with the hope that urban life would improve the migrants' living standards; however, migrants are disappointed when their expectations are not met.

5.4.1 Chapter 4: Does Large Government Size Play a Crucial Role in Subsiding Political Instability? Contribution to Knowledge

The chapter examines the impact of youth unemployment, corruption, gross tertiary enrolment, trade openness, and urban growth rate moderated by government size on political instability. Additionally, it investigates the independent effect of the role of government and its moderated effect via youth unemployment and urban growth rate on political instability. The hypotheses are investigated using 2SLS in panel data analysis, countries where the percentage of youth bulge is less than or equal to 30%, countries where youth bulge make up more than 30% of the population, oil countries, democratic countries and the MENA region. The chapter is different from past empirical research in several aspects. There is a dearth of empirical research that considers the financial role of government in reducing political risk. Only two empirical pieces of research, namely Taydas and Peksen (2012) and Higashijima et al. (2014), investigate the relationship between the independent effect of different types of government expenditure and political instability. Both studies can be criticized for measuring instability only in the form of severe incidences like armed conflict, which, as is discussed in the second chapter, is an inappropriate proxy. Taydas and Peksen (2012) investigate the impact of government expenditure on political instability in panel data analysis without distinguishing between countries, while Higashijima et al. (2014) focus on oil countries. Furthermore, these studies do not examine the moderated effect of government size or its role with other factors on political instability.

5.4.2 Chapter 4: Does Large Government Size Play a Crucial Role in Subsiding Political Instability? Future Research

Future research can investigate the impact of government size on political instability using alternative measures for government size. This research hypothesizes

that government size has a stabilization effect on the political environment; however, it might have a destabilization effect. Hence, future research could investigate the conditions in which government size enhances political instability and from which channel(s). Furthermore, enlarging government size increases current expenditure at the expense of capital expenditure. It might investigate the impact of government size on political instability in countries that have high levels of capital expenditure and low levels of current expenditure versus countries that have a high level of current expenditure and low levels of capital expenditure.

Future research can investigate the impact of expenditure on education on political instability using an alternative proxy like expenditure on education per capita. Furthermore, it can investigate the impact of expenditure per capita at each educational level on instability in countries based on their level of economic development.

5.4.3 Chapter 4: Does Large Government Size Play a Crucial Role in Subsiding Political Instability? Policy Implications

The research hypothesizes that government size or role can lower the contribution of some factors on political instability. However, the results in some sub-samples show that enlargement of government size enhances political instability. Therefore, policy makers need to improve factors that induce a government to enlarge its size to mitigate the risk of political instability. These factors are mainly concentrated in labor markets and the education sector. In labor markets, policy makers need to create a favorable economic environment that generates employment opportunities and reduces pressure on governments to act as employer of last resort. They need to turn education into a source of prosperity through aligning skills attained from the educational system with the skills required by domestic and international labor markets.

This research sheds light on the importance of government size and its role in relaxing pressure on employment and educational opportunities associated with rapid change in urban growth rate; however, other emergent needs and requirements are equally important to stabilize the political environment and require further study.

Appendices

Table A2.1 Past Empirical and Theoretical Literature in Political Instability

	Article	Definition of Political Instability
1	Urdal, H. (2006). A clash of generations? Youth bulges and political violence. International Studies Quarterly, 50(3), 607-629	1. First definition: An armed conflict is defined as a contested incompatibility concerning government and/or territory, between at least two parties, of which one is the government of a state, using armed force. Data is collected from Uppsala/PRIO data set. 2. Second definition: political instability is measured in terms of terrorism and riots and violent demonstration event count data collected as part of the U.S State Failure Task Force (SFTF) project, and originate from the Protocol for the Assessment of Nonviolent Direct Action (PANDA) at Harvard University.
2	Goldstone, J. A., Bates, R. H., Epstein, D. L., Gurr, T. R., Lustik, M. B., Marshall, M. G., ... & Woodward, M. (2010). A global model for forecasting political instability. *American Journal of Political Science*, *54*(1), 190-208.	1. First definition: civil wars (including both ethnic and revolutionary wars). These are events that resulted in at least 1,000 total deaths from conflicts involving state forces, sustained at a rate of at least 100 deaths per year. 2. Second definition measure political instability as the following: ▪ Adverse Regime Changes are major, adverse shifts in political institutions that involve the sudden loss of authority of central state institutions and/or their replacement by a more radical or nondemocratic regime. ▪ Genocides and politicides are sustained and purposive efforts by states or their agents to visit extreme violence and/or death upon a particular communal or political group
3	Fearon, J. D., and Laitin, D. D. (2003). Ethnicity, insurgency, and civil war. American Political Science Review, 97(01), 75-90.	1. First definition: index constructed based on the following criteria:They involved fighting between agents of (or claimants to) a state and organized groups who sought to take control of a government, take power in a region, or use violence to bring about a change in government policies. ▪ The conflict killed or has killed at least 1000 over its course. ▪ At least 100 of the dead are on the side of the government (including civilians attacked by rebels). This last condition is intended to rule out state-led massacres where there is no real organized or effective rebel opposition. ▪ Colonial Wars.
4	Barakat, B., and Urdal, H. (2009). Breaking the waves? Does education mediate the relationship between youth bulges and political violence?	1. First definition: *domestic armed conflict onset,* is drawn from the Uppsala/PRIO dataset. The Uppsala/PRIO dataset sets a relatively low violence threshold for conflict, and distinguishes between minor armed conflict (a minimum of 25 battle-related deaths per year), and war (at least 1,000 battle-related deaths per year).
5	Taydas, Z., and Peksen, D. (2012). Can states buy peace? Social welfare spending and civil conflicts. Journal of Peace Research, 49(2), 273-287.	1. First definition: initiation of civil conflicts uses the list of intrastate-armed conflicts collected by the UCDP/PRIO Armed Conflict Dataset (Gleditsch et al., 2002). An armed conflict is defined as a 'contested incompatibility that concerns government or territory or both where the use of armed force between two parties results in at least 25 battle- related deaths.
6	Collier, P., and Hoeffler, A. (2004). Greed and grievance in civil war. Oxford Economic Papers, 56(4), 563-595.	1. First definition: civil war as an internal conflict with at least 1,000 combat-related deaths per year. In order to distinguish wars from massacres, both government forces and an identifiable rebel organization must suffer at least 5% of these fatalities.
7	Andersen, J. J., and Aslaksen, S. (2013). Oil and political survival. Journal of Development Economics, 100(1), 89-106	1. First definition is measured as political instability by constructing an index of entry and exit of political parties in power, using the Database on Political Institutions, DPI (Beck et al., 2001; Keefer, 2007). The dependent variable in is a binary one indicating whether the chief executive's party is removed from power in a given year.
8	Morrison, K. M. (2009). Oil, nontax revenue, and the redistributional foundations of regime stability. International Organization, 63(01), 107-138.	1. First definition: political instability is measured by regime instability that takes a value of 1 if there is a regime change from one year to the next, and 0 otherwise. A regime is considered to have changed if it receives a 0 in Polity IV's durable variable, which counts the number of years since the most recent regime change. A regime change in Polity IV is defined by a change of three points or more in the polity variable- which ranges from -10 (most authoritarian) to 10 (most democratic)- or the end of a transition period.

Cont'd Table A2.1 Past Empirical and Theoretical Literature in Political Instability

	Article	Definition of Political Instability
9	Smith, B. (2004). Oil wealth and regime survival in the developing world, 1960–1999. American Journal of Political Science, 48(2), 232-246.	1. First definition: political instability measured in terms of regime failure. Index is constructed using the Polity98 data and code it "1" for each year that is given a value of "0" in the regime durability variable, or each intervening year between a change of 3 or more on Polity's regime type index. 2. Second definition: anti state protest, measuring protest as the sum of peaceful demonstrations, riots, and strikes in a country in any given year. 3. Third definition: *civil war* is coded, from "0" to "3": 0 indicates no armed domestic conflict, "1" indicates a conflict with at least 25 battle-related deaths per year and fewer than 1,000 during the course of the conflict; "2" an intermediate conflict with at least 25 battle-related deaths each year and an accumulated total of atleast 1,000 deaths, but fewer than 1,000 in any given year; and "3" a war with at least 1,000 battle-related deaths each year.
10	Collier, P., and Hoeffler, A. (1998). On economic causes of civil war. Oxford Economic Papers, 50(4), 563-573.	1. First definition: the occurrence and the duration of civil war. Civil war is based on four dimensions as following: ▪ One of the primary actors in any conflict identified as a civil war must be the national government in power at the time hostilities begin. ▪ The concept of war requires that both sides have the ability to inflict death upon each other. ▪ Significant military action must take place. Only civil wars that resulted in at least 1,000 battles related deaths per year are included in the data set. ▪ The war must be internal to the country.
11	Collier, P., and Hoeffler, A. (2002). On the incidence of civil war in Africa. Journal of Conflict Resolution, 46(1), 13-28.	1. First definition: the occurrence and the duration of civil war. Civil war is based on four dimensions as following: ▪ One of the primary actors in any conflict identified as a civil war must be the national government in power at the time hostilities begin. ▪ The concept of war requires that both sides have the ability to inflict death upon each other. ▪ Significant military action must take place. Only civil wars that resulted in at least 1,000 battles related deaths per year are included in the data set. The war must be internal to the country.
12	Alesina, A., Özler, S., Roubini, N., and Swagel, P. (1996). Political instability and economic growth. Journal of Economic Growth, 1(2), 189-211.	1. First Model: Government Change= Regime type+dummy variable of change of excutive a government+dummy variable takes (1) unseccessful change included coup otherwise (0)+annual growth of per capita GDP+real per capita GDP at level + regional dummy variables of Africa and Latin America 2. Second Model:Annual growth of GDP per capita= Average annual rate of growth of per capita GDP+average probability of government change+dummy variable of democracy+number of revolutions and coups per year per country+ number of assassination per million of population+GDP per capita in 1960 at level+primary scholl enrollement in 1960+average of real government consumption+Deviation of purchasing power parity in 1960 from the sample mean+dummy variable for outward/inward trade regime orientation + regional dummy variables of Africa and Latin America.
13	Collier, P., Elbadawi, I., and Sambanis, N. (2000). How Much War Will We See? Estimating the Likelihood and Amount of War in 161 Countries, 1960-1998.Unpublished mimeo, The World Bank (January).	1. First definition: political instability measured in form of civil war when the following criteria is satisfied: ▪ The war caused more than 1,000 thousand deaths. ▪ The war challenged the sovereignty of an internationally recognized state ▪ The war occurred within the territory of that state ▪ The state was one of the principal combatants ▪ The rebels were able to mount an organized military opposition to the state ▪ Combatants were concerned with the possibility of living together under the same political unit after the end of the war

Cont'd Table A2.1 Past Empirical and Theoretical Literature in Political Instability

	Article	Definition of Political Instability
14	Marcus Alfred, A., Mazhar, I., and John, M. (2008). Youth bulges, busts, and doing business in violence-prone nations. Business and Politics, 10(3), 1-42.	1. First Definition: index is constructed to measure political instability which is defined as form the clashing of interests and values of some duration and magnitude between at least two parties whether they be organized groups, states, groups of states, or other organizations. Under its definition, conflicts can exist even if there is no official or formal state of war among the contending entities. The elements of conflict that considers are territory, secession, autonomy, ideology/ system, national power, international power, and resources. Conflict is classified into level based on its intensity as following: ▪ Medium state capturing single or occasional outbursts like riots, coups d'états or terrorist attacks ▪ *Latent* if demands are articulated by one of the parties and perceived by the other as such. ▪ It is considered *manifest* if there are acts preliminary to violent force such as verbal pressure, threats of violence, or the imposition of economic sanctions. ▪ It is considered a *crisis* when there is a tense situation in which at least one of the parties uses violence in sporadic incidents. The crisis, when force has been used repeatedly in an organized way. ▪ It becomes a *war* when force is used continuously in an organized and systematic way and the extent of destruction is massive and of long duration ▪ Data used to construct the index of political instability comes from Conflict Barometer, which is an annual report on global conflicts published by the Heidelberg Institute for International Conflict Research (HIIK)
15	Alesina, A., and Perotti, R. (1996). Income distribution, political instability, and investment. European Economic Review , 40(6), 1203-1228	1. First definition: political instability is measured by constructing index that comprises the following components: ▪ The number of politically motivated ▪ The number of people killed in connection with domestic mass violence ▪ The number of successful coups ▪ The number of attempted but unsuccessful coups ▪ Dummy variable that indicates whether a political regime is democratic, semi-democratic or authorization. 2. The first equation is:Total investment= political instability index +the enrollment ratio in primary school in 1960+ purchase power parity in investment deflator (PPPI) in 1960 relative to US dollars+ the magnitude in deviation in PPPI from the sample mean. 3. The second equation is: Index of political instability= income distribution+ primary school enrollment in 1960+ per capita GDP in 1960+ total investment+ urbanization
16	Muller, E. N., and Seligson, M. A. (1987). Inequality and insurgency. American Political Science Review, 81(02), 425-451	1. First definition measures political violence as the natural logarithm of the death rate from domestic conflict per one million population.
17	Sambanis, N. (2001). Do ethnic and no ethnic civil wars have the same causes? A theoretical and empirical inquiry (Part 1). Journal of Conflict Resolution, 45(3), 259-282.	1. The first definition measures political instability in terms of onset of an ethnic war 2. The second definition measures political instability in term of revolutionary/other wars.

Cont'd Table A2.1 Past Empirical and Theoretical Literature in Political Instability

	Article	Definition of Political Instability
18	Bricker, N. Q., and Foley, M. C. (2013). The effect of youth demographics on violence: The importance of the labor market. International Journal of Conflict and Violence, 7(1), 179-194.	1. First Definition: index is constructed to measure political instability which is defined as form the clashing of interests and values of some duration and magnitude between at least two parties whether they be organized groups, states, groups of states, or other organizations. Under its definition, conflicts can exist even if there is no official or formal state of war among the contending entities. The elements of conflict that considers are territory, secession, autonomy, ideology/ system, national power, international power, and resources. Conflict is classified into level based on its intensity as following: ▪ Medium state capturing single or occasional outbursts like riots, coups d'états or terrorist attacks . *Latent* if demands are articulated by one of the parties and perceived by the other as such. .It is considered *manifest* if there are acts preliminary to violent force such as verbal pressure, threats of violence, or the imposition of economic sanctions. It is considered a *crisis* when there is a tense situation in which at least one of the parties uses violence in sporadic incidents. The crisis, when force has been used repeatedly in an organized way. It becomes a *war* when force is used continuously in an organized and systematic way and the extent of destruction is massive and of long duration .Data used to construct the index of political instability comes from Conflict Barometerr
19	Leite, C. A. and J. Weidmann (1999). "Does mother nature corrupt? Natural resources, corruption, and economic growth." Natural Resources, Corruption, and Economic Growth (June 1999). IMF Working Paper (99/85).	1. The first definition: political instability is measured in term of revolutions and coups 2. Model used to estimate the determinants of corruption: Corruption= natural resources + trade openness+ rule of law + political instability
20	Mo, P. H. (2001). "Corruption and economic growth." Journal of Comparative Economics 29(1): 66-79.	1. The first definition of political instability is the average of the number of assassinations per million population per year and the number of revolutions per year over the period 2. Model use to estimate the determinants of economic growth: Economic growth rate= corruption+ ratio of private investment to GDP+ initial per capita income in 1970 + political right+ average years of schooling in age 25 and above from 1970 to 1985 + measure of political stability + rate of population growth.
21	Blomberg, S. B. (1996). Growth, political instability and the defence burden. Economica, 649-672.	1. The first definition: political instability is measured as a number of coups in each year in each country. 2. First model rate of economic growth= primary school enrollment + military spending as percentage of GDP + Dummy variable of Latin America and Africa + probability of coup 3. Second model probability of coup= primary school enrollment + Dummy variable of Latin America and Africa + annual growth rate
22	Mauro, P. (1998). Corruption and the composition of government expenditure.Journal of Public Economics, *69*(2), 263-279.	1. The first definition of political stability is the average of the number of assassinations per million population per year and the number of revolutions per year over the period 2. Model estimates the determinants of public expenditure on education= per capita GDP in 1980 + the percentage of people in age 5-20 to total population+ political instability + corruption
23	Lane, P. R., and Tornell, A. (1996). Power, growth, and the voracity effect. Journal of Economic Growth, *1*(2), 213-241.	1. The first definition of political instability is an index comprises of the following components: ▪ Political assassinations, violent deaths per million population, successful coups and unsuccessful coups. 2. The model: The annual average per capita growth over the period from 1970 to 1990 = GDP per capita in 1970 + the average years of schooling of the population in age (25) and older + the average annual growth relative price of exports to imports over 1970 to 1990 + Dummy variable of powerful interest groups + index of political instability + the income share of the third and fourth quintiles in the income distribution+ dummy variables of Africa, Asia, Latin America and Central America.

Cont'd Table A2.1 Past Empirical and Theoretical Literature in Political Instability

	Article	Definition of Political Instability
24	Londregan, J., and Poole, K. (1992). The seizure of executive power and economic growth: some additional evidence. Political Economy, Growth, and Business Cycles, 51.	1. The first definition political instability measured in form of The riots, elections, political executions, deaths from domestic political violence, successful irregular transfers of executive power, and unsuccessful attempt regular transfers of executive power (failed coups) 2. The model is: Political instability= Recent coups + Past coups+ Last period per capita income + Last period growth rate + dummy variables of Africa, Europe and North America and South America 3. The second model is change in per capita GDP= Recent coups + Past coups+ Last period per capita income + Last period growth rate + dummy variables of Africa, Europe and North America and South America
25	Perotti, R. (1996). Growth, income distribution, and democracy: what the data say. Journal of Economic growth, 1(2), 149-187.	1. The first definition of political instability is an index comprises of the following components: ▪ Political assassinations, violent deaths per million population, successful coups and unsuccessful coups. 2. The model growth*:* average yearly growth rate of per capita GDP, 1960-85= per capita GDP in 1960 +average years of schooling of male population in 1960+ average year of schooling of female population in 1960+ value of investment deflator relative to US dollar in 1960+ political instability index. 3. The second model is political instability=average years of schooling in male population in 1960+ average years of schooling in male population in 1960+ share in income of the third and fourth quintiles, in or around 1960 +dummy of Latin America +Dummy of Asia+ Dummy of Africa
26	Kimenyi, M. S., and Mbaku, J. M. (1993). Rent-seeking and institutional stability in developing countries. Public Choice, *77*(2), 385-405.	1. The first definition measured political instability in term of the survival of regimes in months 2. The second definition measured political in term of successful and unsuccessful coups. 3. The model used to estimate the relationship is: Regime survival= index of religious homogeneity+ index of ethnic homogeneity+ % of population living in urban area+ annual growth rate in urban population+ % of income generated from agriculture+ ratio of military spending per soldier per income per capita+ total population+ civilians per soldiers+population density per KM square+per capita income in US dollars+ annual growth rate in GDP+ % of income generating from public sector+ dummy variable whether leader attain power by coup or otherwise 4. The second equation in political instability index= index of religious homogeneity+ index of ethnic homogeneity+ % of population living in urban area+ annual growth rate in urban population+ % of income generated from agriculture+ ratio of military spending per soldier per income per capita+ total population+ civilians per soldiers+population density per KM square+per capita income in US dollars+ annual growth rate in GDP+ % of income generating from public sector+ dummy variable whether leader attain power by coup or otherwise
27	Basedau, M., and Lay, J. (2009). Resource curse or rentier peace? The ambiguous effects of oil wealth and oil dependence on violent conflict. Journal of Peace Research, 46(6), 757-776.	1. The first definition measure political instability in term of civil war. ▪ The model used to predicate political instability= oil production per capita+ oil production per capita square+ primary commodity export to GDP+ primary commodity export to GDP square+ primary commodity export to GDP*oil dummy+ primary commodity export to GDP square* oil dummy+ log of GDP per capita+ GDP growth+ log population+ log of mountain terrain+ peace duration+ non-contiguous state + ethnic fractionalization+ ethnic dominance

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	Article	Definition of Political Instability
28	Xu, T. (2011). The determinants of political instability: a regression analysis (Doctoral dissertation, Marietta College).	1. The first definition of political instability focuses on the degree of social unrest as a measure of political instability. According to these definitions, a nation is politically unstable if its residents reveal some degree of unhappiness towards the government or the regime. This unhappiness could be expressed via numerous types of activities such as political violence, strikes, and other forms of political protests. Accordingly, dataset provided by the Center of Systematic Peace on the Major Episodes of Political Violence (MEPV), which measure political instability in scale of (10). Dummy variable is created (1) a country is stable if get (0) in scale otherwise it is unstable 2. The model used to predict instability, Dummy of political instability= lagged purchasing power parity (PPP) of GDP per capita+ lagged of economic growth+ lagged of inflation rate + lagged of unemployment rate to total population+ Gross primary enrollment rate+ ratio of urban population to total population + % of internet users to population+ life expectancy+ regime type+ dummy variable whether neighbor country is stable or not 3. The second model considers the economic and political conditions in the region where as a country is located to predicate political instability, Dummy of political instability= lagged purchasing power parity (PPP) of GDP per capita relative to the region average+ lagged of economic growth minus the region average + lagged of inflation rate minus the region average + lagged of unemployment rate to total population minus the region average + Gross primary enrollment rate+ ratio of urban population to total population + % of internet users to population+ life expectancy+ regime type+ dummy variable whether neighbor country is stable or not.
29	Carmignani, F. (2009). The distributive effects of institutional quality when government stability is endogenous. European Journal of Political Economy,25(4), 409-421.	1. The first definition of political instability is measured by the number of government change occurring over five-year period. 2. The first model used to estimate political instability is , Government change = Gini coefficient+ dummy variable of the type of political system+ Index of legal structure and security of property rights from Fraser Institution+ average per capita growth of income + Total Herfindhal Index of parliament. The second model used to predicate Inverse extent of redistribution. The index is defined as (Vmax − Vc) / (Vmax − Vmin), where V is the sum of transfers and subsidies over GDP= government change+ per capita income+ Share of population aged above 65+ trade openness+ regime type+ institutional quality + Gini coefficient
30	Seligson, M. A. (2002). The impact of corruption on regime legitimacy: A comparative study of four Latin American countries. The Journal of Politics,64(02), 408-433.	1. Based on survey results regime legitimacy is defined as prospective source of stability. 2. The model used to predicate regime legitimacy= corruption+ gender+ age+ educational Attainment + income per capita+vote for incumbent party
31	Neumayer, E. (2004). The impact of political violence on tourism dynamic cross-national estimation. Journal of Conflict Resolution, 48(2), 259-281.	1. Different forms of political instability are used to predicate tourist arrivals= tourist events account +violant events account+ conflict intensity+ human right violations+ Autocracy+ effective real exchange rate.
32	Miljkovic, D., and Rimal, A. (2008). The impact of socioeconomic factors on political instability: A cross-country analysis. *The Journal of Socioeconomics,37(6)*, 2454-2463.	1. The three definitions used to predicate political stability is three alternative measures: irregular government changes (IGC), regular government changes (RGC), and stable/unstable binary variable. 2. The model used to predicate alternative forms of political stability= GDP growth rate + initial level of GDP + dummy variable of democracy or otherwise+ number of years since dependence

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	Article	Definition of Political Instability
33	Alesina, A., and Perotti, R. (1994). The political economy of growth: a critical survey of the recent literature. The World Bank Economic Review, 8(3), 351-371.	1. The first definition of political instability is an index the comprises of the following components: ▪ The number of politically motivated assassinations ▪ The number of people killed in association with domestic violence ▪ The number of successful coups ▪ The number of attempted but unsuccessful coups ▪ Dummy variable whether a country is democracy or not. 2. The article predicates two models as following ▪ Investment rate= primary school enrollments rate in 1960+ sociopolitical instability index+ deviation in investment deflator+ GDP in 1960+ middle class share in GDP,1960+ ratio of real demostic investment in GDP +dummy variables of Asia and Africa. ▪ Sociopolitical instability index= primary school enrollments rate in 1960+ GDP in 1960+ middle class share in GDP,1960+ ratio of real demostic investment in GDP +dummy variables of Asia and Africa ▪
34	Isham, J., Woolcock, M., Pritchett, L., and Busby, G. (2005). The varieties of resource experience: natural resource export structures and the political economy of economic growth. The World Bank Economic Review, 19(2), 141-174.	1. The article aims to identify the impact of natural resources on six institutional variables separately. Political instability is identified as the rule of law, political stability(the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism), government effectiveness, absence of corruption, regulatory framework and property right and rule based governance. 2. The model to be estimated: ▪ Each variable of institutional quality individually= manufacturing index+diffuse index+ point source index + coffee and coca index+ ethnic fractionlization+ predicated trade share+ latitude+ English language + European English+ GDP per capita+ secondary school achievement +Trade openness+ change in trade term+ share of primary export to GDP+ Sub-Sahara Africa+ Europe and Middle East + Latin America+ East Asia
35	Alesina, A., and Perotti, R. (1994). The political economy of growth: a critical survey of the recent literature. *The World Bank Economic Review, 8(3)*, 351-371.	1. The first definition of political instability is an index the comprises of the following components: ▪ The number of politically motivated assassinations ▪ The number of people killed in association with domestic violence ▪ The number of successful coups ▪ The number of attempted but unsuccessful coups ▪ Dummy variable whether a country is democracy or not. 2. The article predicates two models as following ▪ Investment rate= primary school enrollments rate in 1960+ sociopolitical instability index+ deviation in investment deflator+ GDP in 1960+ middle class share in GDP,1960+ ratio of real demostic investment in GDP +dummy variables of Asia and Africa. ▪ Sociopolitical instability index= primary school enrollments rate in 1960+ GDP in 1960+ middle class share in GDP,1960+ ratio of real demostic investment in GDP +dummy variables of Asia and Africa.
36	Isham, J., Woolcock, M., Pritchett, L., and Busby, G. (2005). The varieties of resource experience: natural resource export structures and the political economy of economic growth. The World Bank Economic Review, *19*(2), 141-174.	1. The article aims to identify the impact of natural resources on six institutional variables separately. Political instability is identified as the rule of law, political stability(the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism), government effectiveness, absence of corruption, regulatory framework and property right and rule based governance. The model to be estimated: 2. Each variable of institutional quality individually= manufacturing index+diffuse index+ point source index + coffee and coca index+ ethnic fractionlization+ predicated trade share+ latitude+ English language + European English+ GDP per capita+ secondary school achievement +Trade openness+ change in trade term+ share of primary export to GDP+ Sub-Sahara Africa+ Europe and Middle East + Latin America+ East Asia

Cont'd Table A2.1 Past Empirical and Theoretical Literature in Political Instability

	Article	Definition of Political Instability
37	Salif R. Niang (2011) The Youth Density Theory and the Mitigating Effects of Migration. Unpublished article.	1. The political stability is defined as the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism" 2. The model used to predicate political stability and absent of violence = the percentage of population in age (15-24) to population in age (15) and older+ youth bulge square+total population+ Infant mortality rate+ rgime+ neighbor in conflict+ state led discrimination + migrant (primary education+ migrant (secondary education)+migrant (tertiary education)+ Youth Density x Net Migration+ Youth Density x Net Migration (primary)+ Youth Density x Net Migration (secondary)+ Youth Density x Net Migration(tertiary)
38	Barro, R. J. (1989). Economic growth in a cross section of countries (No. 3120). National Bureau of Economic Research.	1. There are two definitions of political instability, the first is the number of coups and revolutions per year from 1960-1985 and the second definition is the number of assassinations per million of population per year from 1960-1985 2. The models used to identify the determinants of economic growth as following: ▪ Growth of per capita GDP = GDP60 (value of per capita income based in 1980)+GDP70 (value of per capita income based in 1980 +GDP60SQ+secondary school enrollment in 1960 +Primary school enrollment in 1960+secondary school enrollment in 1950 +Primary school enrollment in 1950+revoluations+ assassinations+ magnitude of deviation in PPP value of investment deflator in 1960 ▪ Total fertility rate = GDP60 (value of per capita income based in 1980)+ secondary school enrollment in 1960 + primary school enrollment in 1960 +ratio of investment to GDP+ assassinations+ revolutions+ PPP value of investment deflator in 1960 +mortality rate in age from 0 to 4+Africa+Latin America ▪ Investment ratio= GDP60 (value of per capita income based in 1980)+ secondary school enrollment in 1960 + primary school enrollment in 1960 +ratio of investment to GDP+ assassinations+ revolutions+ PPP value of investment deflator in 1960 +mortality rate in age from 0 to 4+Africa+Latin America

Table A2.2 Geographic Regions in the World

Middle East and North Africa: Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Tunisia, United Arab Emirates, Syria, Yemen
North Africa: Sudan and Guinea
Eastern Africa: Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Rwanda, Seychelles, Somalia, Uganda, United Republic of Tanzania, Zambia, Zimbabwe
Middle Africa: Angola, Cameroon, Central African Republic, Chad ,Congo Democratic Republic of the Congo, Equatorial Guinea, Gabon
Southern Africa: Botswana, Lesotho, Namibia, South Africa, Swaziland
Western Africa: Benin Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria , Senegal, Sierra Leone, Togo
Caribbean: Bahamas, Cuba, Haiti, Dominican Republic, Jamaica, Trinidad and Tobago, Barbados, Dominica, Grenada, Antigua and Barbuda, Puerto Rico
Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama
South America: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador , French Guiana, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela (Bolivarian Rep. of)
East Asia: China, China-Hong Kong, China-Macao SAR , Democratic People's Republic of Korea, Japan, Mongolia , Republic of Korea
Central Asia: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan
Southern Asia: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka
South-Eastern Asia: Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia Myanmar, Philippines, Singapore, Thailand, Timor-Leste ,Vietnam
Western Asia: Armenia, Azerbaijan, Cyprus, Georgia, Israel, Turkey
Northern Europe: Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Norway, Sweden, United Kingdom of Great Britain, Northern Ireland.
Western Europe: Austria, Belgium, France, Germany, Liechtenstein, Luxembourg, Monaco, Netherlands Switzerland
Eastern Europe: Belarus, Bulgaria, Czech Republic, Hungary, Poland, Republic of Moldova, Romania
Southern Europe: Albania, Andorra, Bosnia and Herzegovina, Croatia, Greece, Italy, Malta, Montenegro, Portugal, San Marino, Serbia, Slovenia, Spain, Republic of Macedonia
Northern America: Bermuda, Canada ,Greenland, Saint Pierre and Miquelon, United States of America
Oceania: Australia, New Zealand
Melanesia, Micronesia and Polynesia: Fiji , New Caledonia, Papua New Guinea, Solomon Islands, Vanuatu Guam, Kiribati, Marshall Islands, Micronesia (Federated States of) Naura, Northern Mariana Islands, Palau American Samoa, Cook Islands, French Polynesia Niue, Samoa, Tokelau Tonga ,Tuvalu, Wallis and Futuna Islands

Table A2.3 List of Oil, OECD and Democratic Countries

Oil Countries: Algeria, Angola, Azerbaijan, Bahrain, Bolivia, Cameroun, Congo, Dem. Rep., Ecuador, Egypt, Gabon, Indonesia, Iran, Iraq, Kazakhstan, Kuwait, Libya, Mexico, Nigeria, Norway, Oman, Qatar, Russia, Saudi Arabia, Syria, Trinidad, Tunisia, Turkmenistan, United Arab Emirates, Venezuela and Yemen
Non-Oil Countries: Afghanistan, Albania, Argentina, Armenia, Australia, Austria, Bangladesh, Barbados, Belarus, Belgium, Benin, Bhutan, Bosnia-Herzegovina, Botswana, Brazil, Bulgaria, Burkina Faso, Burma, Burundi, Cambodia, Canada, Central African, Chad, Chile, China, Colombia, Costa Rica, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, Gambia, Georgia, Germany, Ghana, Greece, Guatemala Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hungary, India, Indonesia, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kenya, Korea, North, Korea, South, Kyrgyz Republic, Laos, Latvia, Lebanon, Lesotho, Liberia, Lithuania, Macedonia, Malawi, Malaysia, Mali, Mauritania, Mauritius, Mexico, Moldova, Mongolia, Morocco, Mozambique, Namibia, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Republic of China, Rumania, Rwanda, Senegal, Sierra Leone, Singapore, Slovakia, Slovenia, Somalia, South Africa, Spain, Sri Lanka, Sudan, Swaziland, Sweden, Switzerland, Tajikistan, Tanzania, Thailand, Togo, Tunisia, Turkey, Uganda, Ukraine, United Kingdom, United States of America, Uruguay, Uzbekistan, Yemen**,** Yugoslavia, Zaire, Zambia and Zimbabwe
Democratic Countries: Andorra, Antigua and Barbuda, Argentina, Australia, Austria, Bahamas, Bangladesh, Barbados, Belgium, Belize, Benin, Bolivia, Botswana, Brazil, Bulgaria, Canada, Cape Verde, Chile, Colombia, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Dominica, Dominican Republic, Ecuador, El Salvador, Estonia, Fiji, Finland, France, Gambia, Germany, Ghana, Greece, Grenada, Guyana, Honduras, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Korea, South, Latvia, Lesotho, Liechtenstein, Lithuania, Luxemburg, Malawi, Mali, Malta, Marshall Islands, Mauritius, Mexico, Mongolia, Namibia, Nepal, Netherlands, New Zealand, Norway, Palau, Panama, Papua New Guinea, Peru, Philippines, Poland, Portugal, Rumania, San Marino, Senegal, Sierra Leone, Slovakia, Slovenia, Solomon Islands, South Africa, Spain, Surinam, Sweden, Switzerland, Thailand, Tunisia, Ukraine, United Kingdom, United States of America, Uruguay, Vanuatu, Venezuela and Zambia
Autocratic Countries: Afghanistan, Albania, Algeria, Angola, Antigua and Barbuda, Argentina, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, Benin, Bhutan, Bolivia, Bosnia-Herzegovina, Brazil, Brunei, Bulgaria, Burkina Faso, Burma, Burundi, Cambodia, Cameroun, Cape Verde, Central African, Chad, Chile, China, Colombia, Comoros, Congo, Dem. Rep, Croatia, Cuba, Djibouti, Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guine, Eritrea, Estonia, Ethiopia, Fiji, Gabon, Gambia, Georgia, Ghana, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hungary, India, Indonesia, Iran, Iraq, Ivory Coast, Jordan, Kazakhstan, Kenya, Korea, North, Korea, South, Kuwait, Kyrgyz Republic, Laos, Latvia, Lebanon, Lesotho, Liberia, Libya, Macedonia, Malawi, Malaysia, Maldives Islands, Mali, Malta, Mauritania, Mexico, Moldova, Mongolia, Morocco, Mozambique, Namibia, Nepal, Nicaragua, Niger, Nigeria, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Qatar, Rumania, Russia, Rwanda, Saudi Arabia, Senegal, Seychelles, Sierra Leone, Singapore, Slovakia, Solomon Islands, Somalia, South Africa, Sri Lanka, Sudan, Surinam, Swaziland, Syria, Tajikistan, Tanzania, Thailand, Togo, Tunisia, Turkey, Turkmenistan, Uganda, Ukraine, United Arab Emirates, Uzbekistan, Vanuatu, Venezuela, Vietnam, Dem. Re, Vietnam, Republic, Yemen, Zaire, Zambia and Zimbabwe.
OECD: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom and United States of America
Non-OECD: Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda Argentina, Armenia, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belize, Benin, Bhutan, Bolivia, Bosnia-Herzegovi, Botswana, Brazil, Brunei, Bulgaria, Burkina Faso, Burma, Burundi, Cambodia, Cameroun, Cape Verde, Central African, Chad, Chile, China, Colombia, Comoros, Congo, Dem. Rep., Costa Rica, Croatia, Cuba, Cyprus, Czech Republic, Djibouti, Dominica, Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guine, Eritrea, Estonia, Ethiopia, Federated States, Fiji, French Polynesia, Gabon, Gambia, Georgia, Ghana, Grenada, Guadeloupe, Guam, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Iceland, India, Indonesia, Iran, Iraq, Israel, Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Korea, North, Korea, South, Kuwait, Kyrgyz Republic, Laos, Latvia, Lebanon, Lesotho, Liberia, Libya, Liechtenstein, Lithuania, Luxemburg, Macau, Macedonia, Malawi, Malaysia, Maldives Islands, Mali, Malta, Marshall Islands, Martinique, Mauritania, Mauritius, Moldova, Monaco, Mongolia, Morocco, Mozambique, Namibia, Nepal, Netherlands Anti, New Caledonia, Nicaragua, Niger, Nigeria, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Puerto Rico, Qatar, Republic of China, Reunion, Rumania, Russia, Rwanda, San Marino, Sao Tome-Princip, Saudi Arabia, Senegal, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, Sri Lanka, St. Kitts-Nevis, St. Lucia, St. Vincent, Sudan, Surinam, Swaziland, Syria, Tajikistan, Tanzania, Thailand, Togo, Trinidad, Tunisia, Turkmenistan, Uganda, Ukraine, United Arab Emirates, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Dem. Re, Western Sahara, Western Samoa, Yemen, Zaire, Zambia and Zimbabwe

Appendix B: Descriptive Statistics of Dependent and Independent Variables

Table B2.1 Descriptive Statistics of Political Instability and its Subcomponents Across the World

Region		Political Instability	Government Instability	Internal Conflict
Caribbean	N	178	178	178
	Minimum	1	1	1
	Maximum	5	5	5
	Mean	2.747191	3.247191	2.280899
	Std. Deviation	1.339583	1.482713	1.361196
Central America	N	210	210	210
	Minimum	1	1	1
	Maximum	5	5	5
	Mean	2.914286	3.485714	2.338095
	Std. Deviation	1.305962	1.414987	1.46897
Central Asia	N	15	15	15
	Minimum	1	1	1
	Maximum	2	2	2
	Mean	1.133333	1.133333	1.133333
	Std. Deviation	0.3518658	0.3518658	0.3518658
Eastern Africa	N	267	267	267
	Minimum	1	1	1
	Maximum	5	5	5
	Mean	3.423221	3.539326	3.220974
	Std. Deviation	1.325255	1.474517	1.453493
East Asia	N	135	135	135
	Minimum	1	1	1
	Maximum	4	5	3
	Mean	1.933333	3.007407	1.185185
	Std. Deviation	0.8569296	1.432544	0.476072
Eastern Europe	N	201	231	231
	Minimum	1	1	1
	Maximum	5	5	4
	Mean	2.069652	3.168831	1.428571
	Std. Deviation	0.8573939	1.414852	0.7240329
MMP	N	30	30	30
	Minimum	2	1	1
	Maximum	5	5	3
	Mean	2.9	3.4	2.133333
	Std. Deviation	0.922889	1.037238	0.7760792
Middle Africa	N	232	232	232
	Minimum	1	1	1
	Maximum	16.79167	5	5
	Mean	2.800826	2.75431	2.724138
	Std. Deviation	1.681329	1.541624	1.554695
MENA	N	502	502	502
	Minimum	1	1	1
	Maximum	5	5	5
	Mean	2.679283	2.707171	2.669323
	Std. Deviation	1.506715	1.521604	1.530207
Northern America	N	60	60	60
	Minimum	1	1	1
	Maximum	3	5	1
	Mean	1.533333	2.616667	1
	Std. Deviation	0.5664839	1.222552	0
Northern Africa	N	59	59	59
	Minimum	2	1	2
	Maximum	5	5	5

Cont'd Table B2.1 Descriptive Statistics of Political Instability and its Subcomponents Across the World

Region		Political Instability	Government Instability	Internal Conflict
	Mean	3.728814	3.305085	4.152542
	Std. Deviation	1.014218	1.567496	0.826575
Northern Europe	N	255	255	255
	Minimum	1	1	1
	Maximum	4	5	2
	Mean	1.560784	2.721569	1.105882
	Std. Deviation	0.6545054	1.155663	0.3082921
OCEANIA	N	60	60	60
	Minimum	1	1	1
	Maximum	3	5	2
	Mean	1.466667	2.766667	1.033333
	Std. Deviation	0.650076	1.406603	0.1810203
South America	N	358	358	358
	Minimum	1	1	1
	Maximum	5	5	5
	Mean	3.078212	3.530726	2.650838
	Std. Deviation	1.183228	1.264869	1.383531
South-Eastern Asia	N	253	252	252
	Minimum	1	1	1
	Maximum	5	5	5
	Mean	2.320158	2.619048	2.142857
	Std. Deviation	1.398791	1.5062	1.404116
Southern Africa	N	89	89	89
	Minimum	1	1	1
	Maximum	16.79167	5	5
	Mean	3.053839	2.898876	2.94382
	Std. Deviation	1.991322	1.609947	1.264548
Southern Asia	N	120	120	120
	Minimum	1	1	1
	Maximum	16.79167	5	5
	Mean	3.856597	3.483333	3.833333
	Std. Deviation	1.663142	1.414115	1.311445
Southern Europe	N	208	208	208
	Minimum	1	1	1
	Maximum	5	5	4
	Mean	2.144231	2.995192	1.634615
	Std. Deviation	0.9470857	1.294722	0.9015038
Western Africa	N	265	265	265
	Minimum	1	1	1
	Maximum	16.79167	5	5
	Mean	3.218082	3.392453	2.792453
	Std. Deviation	1.536928	1.481176	1.330847
Western Asia	N	120	119	119
	Minimum	1	1	1
	Maximum	16.79167	5	5
	Mean	2.956597	2.865546	2.789916
	Std. Deviation	1.722281	1.234561	1.281379
Western Europe	N	202	202	202
	Minimum	1	1	1
	Maximum	3	5	3
	Mean	1.450495	2.39604	1.074257
	Std. Deviation	0.6149261	1.185142	0.2811326
The Full Sample	N	3819	3847	3847
	Minimum	1	1	1
	Maximum	16.79167	5	5
	Mean	2.60774	3.033273	2.284637
	Std. Deviation	1.440857	1.453003	1.442188

Table B2.2 Descriptive Statistics of Natural Resources Rents as a Percentage of GDP Across the World

Region	N	Minimum	Maximum	Mean	Std. Deviation
Caribbean	550	.000000	64.797954	3.30954862	9.181412307
Central America	365	.000000	21.275051	3.75786142	3.722480488
Central Asia	116	.342774	98.099104	23.54732613	24.173700711
Eastern Africa	525	.000000	39.058023	8.05719014	7.318435401
East Asia	204	.000719	44.935394	4.07749182	7.635915286
Eastern Europe	245	.139687	44.525925	4.88252471	7.189452147
Micronesia, Melanesia and Polynesia	295	.000000	60.395458	6.61975125	11.947184080
Middle Africa	367	2.297299	100.366886	26.27689532	22.006132275
Middle East and North Africa	644	.002172	89.428722	24.66126123	20.138261394
Northern Africa	43	.000000	27.448480	5.38792898	8.661650040
Northern America	86	.431173	13.345867	3.67989553	2.635053913
Northern Europe	370	.000000	21.906956	2.67615316	3.819654778
OCEANIA	86	1.414478	11.121180	3.47948720	2.077892140
South America	516	.631509	52.093892	10.95839527	8.978858967
South-Eastern Asia	340	.000000	84.014547	13.16243871	16.995096136
Southern Africa	205	.271581	39.903690	5.13067442	5.190488466
Southern Asia	303	.016172	76.960796	6.92326526	10.191611498
Southern Europe	374	.000000	19.817042	1.05037751	2.343698904
Western Africa	635	.309869	76.921549	13.48138182	14.515593520
Western Asia	195	.000000	68.165868	5.93404503	14.623269874
Western Europe	362	.000000	85.784515	3.84257975	13.236709218

Table B2.3 Descriptive Statistics of GDP Annual Growth across the World

Region	N	Minimum	Maximum	Mean	Std. Deviation
Caribbean	598	-18.444166	26.139296	3.38513580	5.342739220
Central America	443	-30.900000	15.166531	3.84048395	4.716332717
Central Asia	127	-29.000000	35.384557	2.92410967	8.988368073
Eastern Africa	614	-50.248067	35.224078	3.90136928	6.165530977
East Asia	269	-27.300000	27.498964	6.36500312	5.738168092
Eastern Europe	254	-22.934046	42.410414	2.21595488	6.154882930
Micronesia,Melanesia and Polynesia	250	-14.267483	34.600001	3.31589538	6.070245681
Middle Africa	417	-35.999967	149.97296	4.45371079	11.264930007
Middle East and North Africa[432]	657	-62.076508	104.48446	5.15374939	9.545568115
Northern Africa	53	-10.100000	16.665219	3.43537911	5.922811330
Northern America	106	-3.020266	7.658303	3.26904819	2.183644137
Northern Europe	450	-32.118570	13.060838	3.01129023	4.323132224
OCEANIA	96	-3.936338	7.800279	3.03870689	2.158739281
South America	621	-14.163446	18.286607	3.41797380	4.496632958
South-Eastern Asia	434	-19.826716	22.562428	5.73323109	4.555341774
Southern Africa	233	-13.513497	26.404877	5.19104701	5.243821205
Southern Asia	313	-13.973729	28.696265	5.19426842	3.764300288
Southern Europe	443	-29.588998	88.957664	3.66681139	5.976664862
Western Africa	747	-51.030863	106.27980	3.62401245	7.734367358
Western Asia	244	-44.900000	34.500000	4.23120034	8.086431428
Western Europe	406	-7.283175	14.582442	2.84351382	2.571923142

[432] In Libya the economic size contracted in 2011 as the results of overthrown of former political regime; however, its size recovered in 2012 with growth rate of 104% in comparison with its level a year earlier. Similar unexpected circumstances drive annual growth in Middle Africa as its maximum growth reaches 149%

Table B2.4 Descriptive Statistics of Percentage of Youth Bulge to Population aged 15 and above across the World

Region	N	Minimum	Maximum	Mean	Std. Deviation
Caribbean	719	16.701675	38.341988	29.03071005	5.086486843
Central America	507	20.459356	40.491425	33.30045905	3.777012535
Central Asia	303	20.812903	37.012540	30.24919622	3.955987458
Eastern Africa	977	20.150885	41.704114	34.34727294	3.810148726
East Asia	427	11.636847	39.069063	26.48159277	6.388777074
Eastern Europe	464	13.729019	30.940363	20.32255053	3.060535076
Micronesia, Melanesia and Polynesia	427	21.092212	42.689238	32.23591387	4.067741784
Middle Africa	610	22.887812	41.691449	32.34837251	3.739156187
Middle East and North Africa	1099	16.674407	40.807525	32.15183245	4.382993535
Northern Africa	122	25.209762	37.735965	33.79158238	2.704740821
Northern America	122	16.118170	26.734535	20.92874721	3.217113551
Northern Europe	610	13.546210	27.615886	19.37022980	3.026156637
OCEANIA	122	17.260290	25.824681	21.24859593	2.749673858
South America	732	19.559284	38.832374	30.31364253	4.564010699
South-Eastern Asia	671	16.381490	40.483615	31.39868492	4.351058833
Southern Africa	305	28.341314	40.838246	34.48185371	2.666910853
Southern Asia	470	21.054887	37.732491	32.48638223	2.867306457
Southern Europe	444	11.684646	34.309575	21.41812238	5.262348159
Western Africa	908	22.691187	42.937976	33.97741706	2.664693958
Western Asia	366	19.019337	36.944408	26.37081054	4.324801138
Western Europe	427	12.970747	24.326430	17.90580942	2.631811359

Table B2.5 Descriptive Statistics of Percentage of Youth Bulge aged 15-24 to Total Population across the World

Region	N	Minimum	Maximum	Mean	Std. Deviation
Caribbean	699	12.95597	23.70618	18.66292	2.218765
Central America	488	15.85189	22.87058	19.37944	1.403425
Central Asia	303	12.16875	22.77718	18.84885	2.572967
Eastern Africa	977	15.50983	24.40358	19.20852	1.494036
East Asia	427	10.09072	26.14085	18.05778	3.29978
Eastern Europe	483	11.90065	21.69952	15.72801	1.874687
Micronesia, Melanesia and Polynesia	429	13.3974	31.11484	19.39422	1.613559
Middle Africa	862	12.98969	25.71526	18.90153	1.73027
Middle East and North	1099	12.96679	26.21522	19.16184	2.082227
Northern America	122	13.09895	19.8784	15.6326	2.08163
Northern Africa	173	17.43148	23.42964	19.3173	1.319468
Northern Europe	610	11.00472	19.42648	14.85663	1.752066
OCEANIA	122	13.12423	18.51241	15.63636	1.671024
South America	732	14.95124	23.35177	18.6919	1.692262
South-Eastern Asia	671	12.62372	24.51364	18.97747	2.178251
Southern Africa	183	16.7989	21.10942	19.02279	1.143586
Southern Asia	470	13.62681	24.50359	19.22265	1.482374
Southern Europe	444	10.04412	23.52553	15.82433	2.421558
Western Africa	725	11.82496	23.61832	19.04964	1.415853
Western Asia	366	11.70531	24.1972	17.90615	2.415297
Western Europe	437	10.9939	17.60082	14.12979	1.709934

Table B2.6 Descriptive Statistics Trade Openness Across the World[433]

Region	N	Minimum	Maximum	Mean	Std. Deviation
Caribbean	595	.312738	375.378586	77.82839397	45.212242914
Central America	358	24.932245	333.532237	86.90938624	57.616243448
Central Asia	151	19.620599	179.120901	76.29074783	33.707124995
Eastern Africa	544	10.922909	188.977470	73.62929732	40.574410044
East Asia	375	6.320343	157.865169	69.85817022	30.398247960
Eastern Europe	296	9.248361	199.675024	78.73797436	36.040177218
Micronesia, Melanesia and Polynesia	348	15.239016	149.453388	69.82295672	27.242823870
Middle Africa	364	10.337444	208.725579	71.01345352	49.926300576
Middle East and North Africa	688	16.951122	458.332192	98.33042284	80.887889355
Northern Africa	34	13.533834	150.326063	88.20283200	48.848512620
Northern America	78	41.906251	149.425465	103.30558645	36.898526734
Northern Europe	342	4.193000	162.914492	57.56089333	29.022263628
OCEANIA	92	52.471120	151.025293	89.10514792	17.850871645
South America	437	9.105691	198.766775	79.09170713	36.189055909
South-Eastern Asia	412	9.057735	531.737435	65.09597709	71.778056049
Southern Africa	209	10.995626	186.940661	69.82260820	37.855108471
Southern Asia	358	9.305021	189.876785	68.13674447	39.443987819
Southern Europe	396	.308803	251.138880	63.33697615	45.231007526
Western Africa	672	5.725123	280.361035	75.16955180	41.368282801
Western Asia	214	25.663526	348.050124	83.19535889	36.149143216
Western Europe	397	20.964046	411.035285	111.33556171	73.526224774

[433] Trade openness used in this thesis is the percentage of imports and exports to GDP.

Table B2.7 Descriptive Statistics of Total Youth Unemployment Across the World

Region	N	Minimum	Maximum	Mean	Std. Deviation
Caribbean	157	3.1	54.0	28.685	8.9818
Central America	145	3.8	35.3	14.151	7.3171
Central Asia	11	5.2	20.1	13.318	4.7640
Eastern Africa	42	.7	44.3	16.164	10.2957
East Asia	120	2.8	15.9	8.073	2.8715
Eastern Europe	142	4.6	43.9	21.591	7.9104
Micronesia, Melanesia and Polynesia	14	5.3	45.9	20.136	9.9947
Middle Africa	1	8.2	8.2	8.200	.
Middle East and North Africa	98	1.3	47.8	23.439	8.3267
Northern Africa	1	22.9	22.9	22.900	.
Northern America	66	9.3	19.2	13.674	2.3858
Northern Europe	260	3.9	35.1	15.171	7.3118
OCEANIA	60	7.9	19.4	13.513	3.0038
South America	204	4.5	40.0	18.521	7.0679
South-Eastern Asia	127	1.6	32.4	11.059	7.2378
Southern Africa	34	13.6	58.9	42.318	10.0426
Southern Asia	55	1.9	35.6	14.113	9.4067
Southern Europe	202	8.6	70.9	28.454	13.7947
Western Africa	14	.8	41.2	10.543	10.8346
Western Asia	100	3.9	57.6	19.547	9.0792
Western Europe	194	2.6	28.9	12.184	7.0135

Table B2.8 Descriptive Statistics of the Level of Democracy Across the World

Region	N	Minimum	Maximum	Mean	Std. Deviation
Caribbean	952	1	21	11.46954	4.364458
Central America	520	3	21	13.03654	5.993302
Central Asia	114	2	18	6.403509	4.703076
Eastern Africa	1065	2	21	9.657277	4.958655
East Asia	492	1	21	9.670732	6.975467
Eastern Europe	551	2	21	10.6951	6.971211
Micronesia, Melanesia and Polynesia	556	7	20	11.63849	2.072704
Middle Africa	880	1	20	9.234091	5.261077
Middle East and North	1210	1	18	5.576033	4.23752
Northern America	130	21	21	21	0
Northern Africa	242	2	19	8.818182	4.034087
Northern Europe	650	11	21	18.91231	3.927306
OCEANIA	130	21	21	21	0
South America	780	2	21	13.71154	6.105417
South-Eastern Asia	673	2	21	10.17236	5.341884
Southern Africa	195	4	19	9.25641	4.742427
Southern Asia	498	1	20	10.77711	6.859067
Southern Europe	662	2	21	12.90937	6.809996
Western Africa	773	2	19	9.397154	5.297261
Western Asia	349	4	21	15.56734	5.081991
Western Europe	677	2	21	17.0192	5.718075

Table B2.9 Descriptive Statistics of Urbanization Growth Rate Across the World

Region	N	Minimum	Maximum	Mean	Std. Deviation
Caribbean	877	-3.817315	17.729848	2.91762237	2.632876449
Central America	457	-3.103374	17.550007	2.64694895	2.491977107
Central Asia	217	-1.011050	8.621102	3.56122323	1.718938333
Eastern Africa	923	-1.716968	12.487289	3.04423771	2.246305351
East Asia	424	-.330893	20.196932	4.78837598	3.495265718
Eastern Europe	473	-2.948278	14.128242	2.98737255	2.359192685
Micronesia , Melanesia and Polynesia	477	-2.804971	12.865427	2.91055142	2.315495647
Middle Africa	524	-1.794878	8.352390	2.15005864	1.606326263
Middle East and North Africa	973	-2.197615	17.744913	4.05740008	2.707742902
Northern Africa	87	-42.301838	17.134216	2.35558508	8.015986792
Northern America	109	-.909327	5.093081	2.78757122	1.403238795
Northern Europe	525	-3.567257	11.239530	3.30098941	2.052473939
OCEANIA	110	-1.626033	12.871234	2.57090939	2.947184009
South America	520	-.972043	8.655349	2.48851582	1.998209812
South-Eastern Asia	465	.195988	9.669740	3.74819584	1.894227381
Southern Africa	267	.826420	12.007638	3.75974940	1.512717286
Southern Asia	426	-4.670734	7.197996	2.48691810	2.061039407
Southern Europe	520	-2.088190	12.348838	3.00692127	2.339027673
Western Africa	770	-2.165171	16.850544	3.35390642	2.560376831
Western Asia	350	-3.235513	11.798623	2.52473371	2.921097958
Western Europe	526	-5.612900	21.748874	2.96007351	2.776475674

Table B2.10 Descriptive Statistics of Logarithms of Total Population Across the World

Region	N	Minimum	Maximum	Mean	Std. Deviation
Caribbean	719	1.724784	4.053143	2.91858728	.710132070
Central America	507	1.838333	5.071464	3.51830273	.692731418
Central Asia	303	3.083144	4.443564	3.76131311	.359461474
Eastern Africa	977	1.560170	4.939995	3.55994298	.742045922
East Asia	427	2.230674	6.133482	4.15485397	1.098005149
Eastern Europe	464	3.727148	5.172727	4.32388669	.421408912
Micronesia, Melanesia and Polynesia	427	1.678473	3.836257	2.42117563	.540510206
Middle Africa	610	1.764647	4.793729	3.37097235	.724851345
Middle East and North Africa	1099	1.397923	4.892516	3.54814544	.781423999
Northern Africa	122	1.138808	4.552084	3.10173377	1.122155733
Northern America	122	4.137892	5.494498	4.86647675	.505016151
Northern Europe	610	2.154290	4.792856	3.55231840	.573819935
OCEANIA	122	3.280579	4.350335	3.82089225	.354206979
South America	732	2.332436	5.290502	3.85660894	.686920853
South-Eastern Asia	671	1.681250	5.381434	3.97113313	.875135585
Southern Africa	305	2.436163	4.711405	3.26721210	.632558277
Southern Asia	470	1.867562	6.081212	4.06973520	1.167168132
Southern Europe	444	2.483877	4.781820	3.80494882	.687849823
Western Africa	908	2.250581	5.203326	3.55329898	.594308815
Western Asia	366	2.693739	4.858161	3.64480760	.546160476
Western Europe	427	2.471293	4.923497	3.99790910	.705114513

Table B2.11 Descriptive Statistics of Gross Tertiary Enrolment Across the World

Region	N	Minimum	Maximum	Mean	Std. Deviation
Caribbean	173	0.60561	117.8914	19.53055	23.30079
Central America	228	0.84567	46.74096	16.59986	9.934691
Central Asia	97	8.87381	52.92236	27.26497	11.87337
Eastern Africa	348	0.06821	40.32104	2.375906	4.994617
East Asia	199	0.13147	101.7592	31.26782	24.71738
Eastern Europe	356	0	91.45247	36.14623	21.34489
Micronesia, Melanesia and Polynesia	33	0.67607	42.86175	6.506374	8.66696
Middle Africa	288	0.01462	15.00411	3.22423	2.817644
Middle East and North Africa	520	0.0134	60.87731	15.57907	11.96231
Northern Africa	54	47.04594	97.09278	70.70514	15.16575
Northern America	48	0.55336	15.17738	5.905866	4.815629
Northern Europe	388	4.193	95.08737	43.51999	23.09777
OCEANIA	86	15.76842	86.33409	48.47121	23.05771
South America	332	1.5861	78.62611	22.87722	16.49198
South-Eastern Asia	299	0.08335	59.89669	13.87758	13.46927
Southern Africa	70	0.47896	10.31276	2.704474	2.34615
Southern Asia	174	0.22137	24.7677	5.348444	4.227735
Southern Europe	310	2.52697	113.9834	33.21248	21.7771
Western Africa	261	0.03754	20.6206	2.951147	3.425818
Western Asia	176	1.30066	69.38549	27.27436	16.12584
Western Europe	250	1.07454	77.34356	34.22236	18.68783

Table B2.12 Descriptive Statistics of Dependent and Independent Variables of all Sub-samples

		Political Instability	Youth bulge	Youth unemployment	Rents from Natural Resources	Trade Openness	GDP annual Growth	Level of Democracy	Gross tertiary enrolment	Log total population	Urban growth rate
Non-Oil	N	3282.00	1558	3355	2090	3468	3662	2491	3282	2855	
	Min	1.00	11.68	-0.36	0.00	0.31	-51.03	1.00	0.00	2.40	-42.30
	Max	24.00	41.70	4.26	94.64	411.04	106.28	21.00	117.89	6.13	17.55
	Mean	7.72	28.15	2.74	6.70	74.75	3.55	14.25	27.80	4.01	3.08
	St. Dev	3.99	7.94	0.63	10.31	49.31	5.96	6.63	24.26	0.64	2.77
Oil	N	655.00	159	685	330	672	748	423	655	542	
	Min	1.00	15.02	0.26	4.26	5.73	-62.08	1.00	0.08	2.53	-0.97
	Max	21.00	39.05	3.87	84.03	279.12	104.48	21.00	79.28	5.26	17.74
	Mean	7.96	30.11	2.73	29.90	80.24	3.78	7.71	22.51	3.96	3.49
	St.dev	4.07	5.97	0.59	15.05	44.46	8.20	6.50	18.76	0.67	2.17
Autocratic	N	2744.00	583	2772	1710	2833	3087	1749	2744	2457	
	Min	0.50	15.882	-0.357	0.000	5.725	-62.077	1.000	0.081	1.792	-42.302
	Max	24.00	42.403	4.261	100.367	208.726	149.973	20.000	117.891	6.133	17.745
	Mean	8.74	31.683	2.697	14.618	70.399	3.957	9.419	15.877	3.889	3.202
	St.dev	4.35	5.754	0.740	16.694	38.342	8.145	5.824	16.314	0.737	2.749
Democratic	N	1681.00	1256	1905	1110	1986	2098	1390	1681	1598	
	Min	1.00	11.64	-0.22	0.00	0.31	-21.26	2.00	0.56	1.80	-4.67
	Max	24.00	40.49	4.08	56.82	411.04	19.45	21.00	113.98	6.08	14.74
	Mean	6.04	23.46	2.73	3.30	77.36	3.25	18.13	40.01	3.77	2.97
	St.dev	2.95	7.51	0.58	6.49	55.58	3.84	4.00	23.83	0.85	2.44
Non-OECD	N	3076.00	4204	1272	4259	2766	4406	5098	2587	4204	4042
	Min	0.50	13.31	-0.36	0.00	1.50	-62.08	1.00	0.00	1.79	-42.30
	Max	24.00	42.40	4.26	100.37	375.38	149.97	21.00	117.89	6.13	21.75
	Mean	8.10	29.93	2.78	11.03	69.70	3.92	11.59	20.95	3.68	3.21
	St.dev	4.19	6.64	0.68	15.30	40.13	7.07	6.03	20.14	0.82	2.74
OECD	N	668.00	682	707	419	735	768	665	668	608	
	Min	1.00	11.64	1.16	0.00	0.31	-11.89	2.00	7.32	3.51	-2.95
	Max	14.33	35.49	4.01	21.91	411.04	11.27	21.00	113.98	5.49	12.87
	Mean	5.42	18.22	2.63	1.94	95.74	2.34	20.32	49.26	4.30	3.24
	St.dev	2.28	4.46	0.56	3.16	74.33	2.68	2.55	20.90	0.52	2.45

Appendix C: Unit Root Test for Independent Variables

Table C2.1 Unit Root Test of GDP Annual Growth

Fisher-type unit-root test for GDP Annual Growth			
Based on augmented Dickey-Fuller tests			
Ho: All panels contain unit roots		Number of panels	= 187
Ha: At least one panel is stationary		Avg. number of periods =	41.58
AR parameter: Panel-specific		Asymptotic: T -> Infinity	
Panel means: Included			
Time trend: Included		Cross-sectional means removed	
Drift term: Not included		ADF regressions: 1 lag	
Statistic	p-value		
Inverse chi-squared (374) P	2223.6651	0.0000	
Inverse normal	Z	-32.6978	0.0000
Inverse logit t(939)	L*	-43.7049	0.0000
Modified inv. chi-squared Pm		67.6305	0.0000
P statistic requires number of panels to be finite.			
Other statistics are suitable for finite or infinite number of panels.			

Table C2.2 Unit Root Test of Natural Resources Rent

Fisher-type unit-root test for Natural resources rents as percentage
Based on augmented Dickey-Fuller tests
Ho: All panels contain unit roots Number of panels = 185
Ha: At least one panel is stationary Avg. number of periods = 36.90
AR parameter: Panel-specific Asymptotics: T -> Infinity
Panel means: Included
Time trend: Included Cross-sectional means removed
Drift term: Not included ADF regressions: 1 lag
Statistic p-value
Inverse chi-squared(370) P 597.8575 0.0000
Inverse normal Z -7.1020 0.0000
Inverse logit t(929) L* -7.3332 0.0000
Modified inv. chi-squared Pm 8.3762 0.0000
P statistic requires number of panels to be finite.
Other statistics are suitable for finite or infinite number of panels.

Table C2.3 Unit Root Test of Total youth unemployment

Fisher-type unit-root test for Total youth unemployment
Based on augmented Dickey-Fuller tests
Ho: All panels contain unit roots Number of panels = 147
Ha: At least one panel is stationary Avg. number of periods = 13.93
AR parameter: Panel-specific Asymptotics: T -> Infinity
Panel means: Included
Time trend: Not included
Drift term: Not included ADF regressions: 0 lags
Statistic p-value
Inverse chi-squared(202) P 614.1195 0.0000
Inverse normal Z -6.1019 0.0000
Inverse logit t(479) L* -11.9106 0.0000
Modified inv. chi-squared Pm 20.5037 0.0000
P statistic requires number of panels to be finite.
Other statistics are suitable for finite or infinite number of panels

Table C2.4. Unit Root Test of Level of Democracy

Fisher-type unit-root test for polity			
Based on augmented Dickey-Fuller tests			
Ho: All panels contain unit roots	Number of panels	=	209
Ha: At least one panel is stationary	Avg. number of periods =		57.89
AR parameter: Panel-specific	Asymptotics: T -> Infinity		
Panel means: Included			
Time trend: Not included			
Drift term: Not included	ADF regressions: 0 lags		
Statistic	p-value		
Inverse chi-squared(416) P	620.9622		0.0000
Inverse normal Z	-3.8717		0.0001
Inverse logit t(719) L*	-7.8841		0.0000
Modified inv. chi-squared Pm	7.1058		0.0000
P statistic requires number of panels to be finite.			
Other statistics are suitable for finite or infinite number of panels.			

Table C2.5 Unit Root Test of Urbanization growth rate

Fisher-type unit-root test for urban growth			
Based on augmented Dickey-Fuller tests			
Ho: All panels contain unit roots		Number of panels	= 202
Ha: At least one panel is stationary		Avg. number of periods =	49.60
AR parameter: Panel-specific		Asymptotics: T -> Infinity	
Panel means: Included			
Time trend: Not included			
Drift term: Not included		ADF regressions: 0 lags	
Statistic	p-value		
Inverse chi-squared(396)	P	582.4525	0.0000
Inverse normal	Z	-1.1248	0.1303
Inverse logit t(994)	L*	-2.8623	0.0021
Modified inv. chi-squared	Pm	6.6253	0.0000
P statistic requires number of panels to be finite.			
Other statistics are suitable for finite or infinite number of panels.			

Appendix D: Endogeneity Test of Independent Variables

Table D2.1 Endogeneity Test of GDP annual growth

Political instability	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
GDP growth	-0.3284824	0.0664621	-4.94	0	-0.4590064	-0.1979583
Yb	0.2193792	0.0237715	9.23	0	0.1726947	0.2660638
TYU	0.4661397	0.1549261	3.01	0.003	0.1618825	0.7703969
Rents	-0.0437477	0.0138493	-3.16	0.002	-0.0709461	-0.0165492
TO	-0.0039013	0.0016572	-2.35	0.019	-0.0071558	-0.0006467
RT	-0.0266814	0.0293801	-0.91	0.364	-0.0843807	0.0310178
GTE	-0.0075013	0.0063628	-1.18	0.239	-0.0199972	0.0049945
Log T.pop	1.269573	0.1583399	8.02	0	0.9586113	1.580534
UGR	0.049379	0.0359939	1.37	0.171	-0.021309	0.1200669
Residual from reduced form equation	0.2703167	0.0730768	3.7	0	0.1268023	0.4138312
Constant	-3.233797	1.114934	-2.90	0.004	-5.423399	-1.044194

1.1 Test one period lag of GDP annual growth as valid instrument

test(lag1 GDP annual Growth=0
(1) lag1 GDP annual Growth = 0
F(1, 607) = 126.84
Prob > F = 0.0000

Table D2.2 Endogeneity Test of Trade Openness

Political instability	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
TO	-0.0026188	0.0017182	-1.52	0.128	-0.0059933	0.0007556
Yb	0.1614153	0.0220133	7.33	0	0.1181815	0.204649
TYU	0.5516106	0.1595619	3.46	0.001	0.2382344	0.8649868
Rent	-0.04589	0.0142337	-3.22	0.001	-0.0738447	-0.0179352
RT	-0.0294491	0.0302699	-0.97	0.331	-0.0888986	0.0300004
GTE	-0.0092752	0.0065945	-1.41	0.16	-0.0222266	0.0036762
Log T.pop	1.498085	0.1587726	9.44	0	1.186259	1.809911
UGR	0.0484306	0.0372984	1.3	0.195	-0.0248227	0.121684
Residual from reduced form equation	-0.0099376	0.0101922	-0.98	0.33	-0.0299549	0.0100796
Constant	-4.205366	1.137393	-3.7	0	-6.439181	-1.97155

Table D2.3 Endogeneity Test of Gross Tertiary Enrolment

Political instability	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
GTE	-0.0018009	0.0066494	-0.27	0.787	-0.0148617	0.0112598
Yb	0.1740595	0.0219424	7.93	0	0.1309603	0.2171588
TYU	0.5123374	0.1592156	3.22	0.001	0.1996059	0.8250689
Rents	-0.0589703	0.0142588	-4.14	0	-0.0869775	-0.0309632
TO	-0.0026142	0.0016698	-1.57	0.118	-0.0058941	0.0006657
RT	-0.0539232	0.0308853	-1.75	0.081	-0.1145882	0.0067417
Log T.pop	1.506403	0.1593674	9.45	0	1.193373	1.819432
UGR	0.027636	0.0369941	0.75	0.455	-0.0450279	0.1002998
Residual from reduced form equation	-0.051481	0.042899	-1.2	0.231	-0.1357432	0.0327812
Constant	-4.131381	1.150593	-3.59	0	-6.391378	-1.871384

Table D2.4 Endogeneity Test of Total Youth Unemployment

Political Instability	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
TYU	0.6435888	0.1776768	3.62	0	0.294575	0.9926027
Yb	0.1807943	0.0215589	8.39	0	0.1384457	0.2231429
Rents	-0.0446328	0.0147594	-3.02	0.003	-0.073625	-0.0156406
TO	-0.0031231	0.0015519	-2.01	0.045	-0.0061714	-0.0000747
RT	0.0190194	0.0310883	0.61	0.541	-0.042048	0.0800867
GTE	-0.0049126	0.0060464	-0.81	0.417	-0.0167896	0.0069645
Log T.pop	1.431293	0.1505622	9.51	0	1.135541	1.727045
UGR	0.0499323	0.0350739	1.42	0.155	-0.0189641	0.1188286
Residual from reduced form equation	0.3651097	0.3997326	0.91	0.361	-0.4200923	1.150312
Constant	-5.689349	1.127188	-5.05	0	-7.903504	-3.475194

Table D2.5 Endogeneity Test of the Level of Democracy

Political Instability	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
RT	0.0325799	0.1939769	0.17	0.867	-0.3483687	0.4135285
YB	0.1802877	0.0495338	3.64	0	0.083009	0.2775665
TYU	0.5156428	0.1626492	3.17	0.002	0.1962182	0.8350674
Rents	-0.0352882	0.0421173	-0.84	0.402	-0.1180017	0.0474253
TO	-0.0026725	0.0020784	-1.29	0.199	-0.0067542	0.0014091
GTE	-0.0090517	0.0078185	-1.16	0.247	-0.0244063	0.006303
Log T.pop	1.478108	0.1562808	9.46	0	1.17119	1.785025
UGR	0.0328387	0.0372181	0.88	0.378	-0.0402535	0.1059308
Residual from reduced form equation	-0.0654752	0.1963509	-0.33	0.739	-0.4510861	0.3201357
Constant	-5.607345	4.81678	-1.16	0.245	-15.06695	3.852263

Appendix E: The Empirical Results of the Robustness Test

Table E 2.1 Empirical Results of Model 2 Based on the Percentage of Youth Bulge over Period 1984-2013.

Independent variables	Dependent variable: Political Instability							
	Model 2-1	Model 2-2	Model 2-3	Model 2-4	Model 2-5	Model 2-6	Model 2-7	Model 2-8
YB	0.230*** (0.028)	-2.146 (1.777)	0.248*** (0.058)	-0.157* (0.094)	0.280*** (0.035)	-0.549 (0.348)	-2.145 (1.777)	0.230*** (0.028)
TYU	0.720*** (0.184)	0.584 (0.989)	0.831*** (0.214)	-0.214 (0.481)	0.875*** (0.182)	-1.490** (0.674)	0.584 (0.989)	0.720*** (0.184)
Rents	-0.030*** (0.014)	-0.066 (0.086)	0.016 (0.025)	-0.036** (0.015)	-0.038** (0.017)	-0.012 (0.027)	-0.066 (0.086)	-0.030*** (0.014)
TO	-0.005*** (0.001)	0.045** (0.020)	-0.002 (0.001)	0.006 (0.007)	-0.003** (0.001)	0.013 (0.011)	0.045** (0.020)	-0.005*** (0.001)
GDP growth	-0.323*** (0.071)	-0.753 (0.476)	-0.413*** (0.082)	-0.238* (0.128)	-0.338*** (0.079)	-0.499*** (0.191)	-0.753 (0.476)	-0.323*** (0.071)
RT	0.005 (0.043)	0.004 (0.252)	-0.101* (0.061)	-0.004 (0.055)	-0.004 (0.049)	-0.080 (0.097)	0.004 (0.252)	0.005 (0.043)
GTE	-0.006 (0.006)	-0.291* (0.170)	0.009 (0.006)	-0.116*** (0.028)	0.001 (0.006)	-0.069* (0.038)	-0.291* (0.170)	-0.006 (0.006)
Log T.pop	1.132*** (0.164)	1.549 (2.945)	0.907*** (0.194)	0.282 (0.461)	0.872*** (0.168)	1.693* (1.008)	1.549 (2.945)	1.132*** (0.164)
UGR	0.070* (0.040)	-0.181 (0.667)	0.144*** (0.045)	-0.028 (0.064)	0.076* (0.040)	-0.043 (0.136)	-0.181 (0.667)	0.070* (0.040)
Constant	-4.273*** (1.387)	80.544 (75.791)	-2.891* (1.652)	15.531*** (5.777)	-4.734*** (1.444)	26.400* (16.002)	80.544 (75.791)	-4.273*** (1.387)
Adjusted R square	29%	63%	21%	20%	28.00%	42%	1%	29%
Number of observation	589	28	424	193	541	76	28	589
Sample	Countries have youth bulge <=38.9%	Countries have youth bulge >38.9%	Countries have youth bulge <=24.278%	Countries have youth bulge > 24.278%	Countries have youth bulge <=31.407%	Countries have youth bulge > 31.407%	Countries have youth bulge between 34.411% to 42.937%	Countries have youth bulge <=34.411%
Estimation method	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS
Wald test (P-value)	0	0	0	0	0	0	0	0
Number of instrument	1	1	1	1	1	1		
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0	0		

White Heteroskedasticity corrected standard errors are in parenthesises. *, **, *** Indicate significance at the 10 percent, 5 percent and 1 percent level, respectively. YB is youth bulge, TYU is rate of total youth unemployment, Rents is rents from natural resources, TO is trade openness, GDP growth is GDP annual growth, RT is level of democracy, GTE is gross tertiary enrolment, Log T.pop is logarithm of total population and UGR is urban growth rate.

Appendix F: The Empirical Results of the Robustness Test

Table F2.1 Empirical Results of Fixed Effect (period effect) over Period 1984-2013

Independent variables	Dependent variable: Political Instability					
	Model 2	Model 19	Model 24	Model 29	Model 33	Model 38
YB	0.209*** (0.023)	0.185*** (0.023)	0.183*** (0.023)	0.116*** (0.035)	0.235*** (0.022)	0.148*** (0.027)
TYU	0.601*** (0.151)	0.594*** (0.160)	-0.061 (0.208)	0.534*** (0.152)	0.767*** (0.154)	0.615*** (0.150)
Rents	-0.062*** (0.013)	-0.065*** (0.014)	-0.050*** (0.013)	-0.065*** (0.013)	-0.054*** (0.013)	-0.069*** (0.013)
TO	-0.004*** (0.001)	-0.004** (0.001)	-0.003** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)
GDP growth	-0.286*** (0.059)	-0.537*** (0.126)	-0.285*** (0.058)	-0.293*** (0.059)	-0.248*** (0.061)	-0.289*** (0.059)
RT	-0.041 (0.029)	-0.067** (0.031)	-0.034 (0.028)	-0.035 (0.029)	-0.021 (0.028)	-0.043 (0.028)
GTE	-0.005 (0.006)	-0.004 (0.007)	-0.007 (0.006)	-0.003 (0.006)	-0.040*** (0.011)	-0.007 (0.006)
Log T.pop	1.316*** (0.155)	1.384*** (0.161)	1.163*** (0.154)	1.323*** (0.153)	1.162*** (0.154)	1.288*** (0.153)
UGR	0.075** (0.036)	0.092** (0.038)	0.055 (0.035)	0.076** (0.035)	0.090** (0.035)	0.086** (0.035)
YB*GDP growth		-0.032*** (0.009)				
YB*TYU			-0.097*** (0.021)			
YB*RT				0.012*** (0.003)		
YB*GTE					-0.003*** (0.0009)	-0.007 (0.006)
YB*Rents						-0.008*** (0.002)
Constant	-3.413*** (1.098)	3.864*** (1.232)	4.690*** (0.954)	2.495*** (0.918)	2.210** (1.044)	2.288** (1.003)
Adjusted R square	35%	29.00%	38%	37%	39%	32%
Number of observation	617	617	617	617	617	617
Estimation method	2SLS Fixed effect(period)					
Wald test (P-value)						
P-value	0	0	0	0	0	0
Number of instrument	1	1	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesises. *, **, *** Indicate significance at the 10 percent, 5 percent and 1 percent level, respectively. YB is youth bulge, TYU is rate of total youth unemployment, Rents is rents from natural resources, TO is trade openness, GDP growth is GDP annual growth, RT is level of democracy, GTE is gross tertiary enrolment, Log T.pop is logarithm of total population and UGR is urban growth rate.

Table F2.2 Empirical Results of Alternative Measure of Political Instability over Period 1984-2013

Independent variables	Dependent variable: Political Instability					
	Model 2	Model 19	Model 24	Model 29	Model 33	Model 38
YB	0.084*** (0.009)	0 .080*** (0.008)	0.080*** (0.009)	0.044*** (0.018)	0.095*** (0.009)	0.061*** (0.011)
TYU	0.223*** (0.074)	0.223 (0.072)	0.106 (0.136)	0.189*** (0.072)	0.302*** (0.073)	0.227*** (0.074)
Rents	0.006 (0.005)	0.006 (0.005)	0.009* (0.005)	0.004 (0.005)	0.009* (0.005)	0.004 (0.005)
TO	-0.002*** (0.0005)	-0.002*** (0.0005)	-0.002*** (0.0005)	-0.002*** (0.0005)	-0.001*** (0.0005)	-0.002*** (0.0005)
GDP growth	-0.056*** (0.021)	-0.110*** (0.056)	-0.055** (0.021)	-0.056*** (0.021)	-0.041* (0.022)	-0.056*** (0.020)
RT	0.009 (0.015)	0.004 (0.002)	0.011 (0.014)	0.011 (0.015)	0.020 (0.014)	0.009 (0.014)
GTE	-0.005*** (0.002)		-0.005*** (0.002)	-0.004* (0.002)	-0.022*** (0.005)	-0.005*** (0.002)
Log T.pop	0.448*** (0.968)	0.460*** (0.061)	0.421*** (0.060)	0.456*** (0.058)	0.380*** (0.060)	0.436*** (0.057)
UGR		0.004 (0.017)	-0.002 (0.017)	0.0009 (0.016)	0.004 (0.017)	0.005 (0.016)
YB*GDP growth		-0.006 (0.004)				
YB*TYU			-0.017 (0.012)			
YB*RT				0.005*** (0.002)		
YB*GTE					-0.001*** (0.0004)	
YB*Rents						-0.003*** (0.0008)
Constant	-2.045*** (0.488)	0.668 (0.547)	1.082*** (0.383)	0.644* (0.376)	0.130 (0.456)	0.549 (0.450)
Adjusted R square	38%	35.00%	38%	39%	41%	40%
Number of observation	633	633	633	633	633	633
Estimation method	2SLS					
Wald test (P-value)						
P-value	0	0	0	0	0	0
Number of instrument	1	1	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesises. *, **, *** Indicate significance at the 10 percent, 5 percent and 1 percent level, respectively. YB is youth bulge, TYU is rate of total youth unemployment, Rents is rents from natural resources, TO is trade openness, GDP growth is GDP annual growth, RT is level of democracy, GTE is gross tertiary enrolment, Log T.pop is logarithm of total population and UGR is urban growth rate

Appendix G: Correlation Matrix

Variables	PI	YB	TYU	Rents	TO	GDP growth	RT	GT	Log T.pop	UGR
PI	1									
YB	0.465	1.000								
P-value	0.000									
TYU	0.170	0.052	1.000							
P-value	0.000	0.028								
Rents	0.049	0.230	0.005	1.000						
P-value	0.003	0.000	0.842							
TO	-0.020	-0.047	-0.086	0.001	1.000					
P-value	0.378	0.017	0.005	0.956						
GDP growth	-0.140	0.059	-0.143	0.132	-0.056	1.000				
P-value	0.000	0.000	0.000	0.000	0.004					
RT	-0.261	-0.457	0.023	-0.371	0.006	-0.065	1.000			
P-value	0.000	0.000	0.319	0.000	0.741	0.000				
GTE	-0.365	-0.748	0.065	-0.243	0.006	-0.087	0.513	1.000		
P-value	0.000	0.000	0.011	0.000	0.810	0.000	0.000			
Log T.pop	0.108	-0.039	-0.084	-0.004	0.101	-0.007	0.121	0.109	1.000	
P-value	0.000	0.007	0.000	0.797	0.000	0.640	0.000	0.000		
UGR	-0.033	0.043	0.023	0.046	-0.140	0.023	-0.041	0.033	-0.030	1.000
P-value	0.083	0.009	0.378	0.005	0.000	0.156	0.006	0.100	0.071	

PI is political instability, YB is youth bulge, TYU is rate of total youth unemployment, Rents is rents from natural resources, TO is trade openness, GDP growth is GDP annual growth, RT is level of democracy, GTE is gross tertiary enrolment, Log T.pop is logarithm of total population and UGR is urban growth rate

Appendix of the Third Chapter

Table A3.1 Past Empirical Literature on the Consequences of Corruption

Research Area: The adverse effect on economy	**Research Area: The adverse effect on economy**	**Research Area: The adverse effect on government performance**	**Research Area: The adverse effect on other aspects**
On initiating economic reform: Rundquist et al. (1977); Myint (2000)	On expanding of the Shadow Economy (Legal side): Myint (2000); Echazu and Bose (2008); Schneider and Buehn (2009).	On a government revenues and expenditure: Tanzi (1998); Myint (2000)	On social values and norms: Tanzi (1995), Nowak (2001); Truex (2011); Bardhan (2005); Rose- Ackerman and Truex (2012)
On GDP/capita and GDP growth: Husted (1999); Hall and Jones (1999); Kaufmann et al. (1999); Tanzi and Davoodi (2001)	On price control and black market: Myint (2000); Tanzi (2013)	On quality of infrastructure: Tanzi (1998); Mauro (1998); Kenny (2006)	On civil and political rights: Evans (1999); Kaufmann (2004)
On entrepreneurship: Tanzi (1998); Ades and Di Tella (1999); Baumol (1990); Murphy et al. (1991)	On skilled emigration: Docquier/Rapoport (2011); Dimant et al. (2013a)	On a government plans and decisions: Evans (1999); Tanzi (2013)	On public support of a government legitimacy
On investment and business environment: Nowak (2001); Tanzi (2013)	**Research Area: The adverse effect on public welfare**	On a governmental budget allocation: Mauro (1998); EstyandPorter (2002); Gupta et al. (2002)	On moving to democracy and market economy: Tanzi (1998); Johnston (2000)
On consumption Patterns: Myint (2000); Gokcekus/Suzuki (2013)	On service delivery and human right: Mauro (1998); McPake et al. (1999); Tanzi and Davoodi (2001)	On composition of public investment expenditure: Wei (2000); Wei/Wu (2001)	
On production decisions: Mauro (1995); Sequiera and Djankov (2010)	On social welfare: Kurer (1993); Nowak (2001); Tanzi (2013); Wei (2000); Tanzi (1998); Sand holtz and Koetzle (2000)	On efficiency of the Government's performance: Tanzi (1998); Rose-Ackerman (1999); Seligson (2002)	
On FDI and a country capital stock: Campos et al. (1999); Habib and Zurawicki (2002)	On increasing inefficiencies: Myint (2000); Zhong (2010); Myrdal (1968); Tanzi (1998); Nowak (2001);	On management of public funds: Tanzi (1999); Myint (2000)	
Distortion of Markets: Beck et al. (1991); Mêon and Sekkat (2004)	On income inequality: Kurer (1993); Tanzi (1998); Wayne (2000); Myint (2000); Nowak (2001); Gupta et al. (2002); Begović (2006);	On expenditure on education and health sector: Mauro (1998); Hunt (2006); Rose Ackerman and Truex (2012)	
On quality of public investment: Tanzi and Davoodi (1997); Sarkar and Hasan (2001)	On reallocating wealth from poor to the rich: Tanzi (1998); Evans (1999)		
On expanding of the Shadow Economy (Drugs and Smuggling): Johnson et al. (1997); Myint (2000); Schneider and Buehn (2009)	On sustaining development process: Dasgupta (2001); Aidt (2009)		

Table adopted from (Dimant, 2013)

Appendix B: Descriptive Statistics

Table B3.1 Descriptive Statistics of Corruption Across the World Region

Region	N	Min	Mix	Mean	St. Deviation
Caribbean	178	2	6	3.643	1.044
Central America	210	1	4.5	3.283	1.081
Central Asia	15	3	4.5	4.294	0.474
Eastern Africa	267	2	6	3.619	1.041
East Asia	135	1	5	2.587	1.192
Eastern Europe	231	1	5	3.115	1.072
Micronesia, Melanesia and Polynesia	30	2	5	3.711	0.961
Middle Africa	232	0	6	3.508	1.264
MENA	502	2	5	3.509	0.782
North America	60	0	2.292	0.985	0.768
Northern Africa	59	2	5.5	3.849	1.028
Northern Europe	255	0	4	1.126	1.300
OCEANIA	60	0	1.5	0.763	0.484
South America	358	1.5	6	3.384	0.865
South-Eastern Asia	252	0	6	3.196	1.247
Southern Africa	89	3	5	3.818	0.593
Southern Asia	120	2	6	3.730	0.861
Southern Europe	208	1	5	2.497	0.953
Western Africa	265	2	6	3.823	0.882
Western Asia	119	1	4.5	2.932	1.180
Western Europe	202	0	3	0.993	0.785
Total	3847	0	6	3.023	1.353

Table B3.2 Descriptive Statistics of Corruption of all Sub-samples

Classification	N	Min	Mix	Mean	St. Deviation
Non-OECD	3104	0	6	3.40076	1.099119
OECD	743	0	4	1.444145	1.161742
Autocratic	2181	0	6	3.620568	0.9945496
Democratic	1606	0	6	2.227636	1.368871
Non-oil	2870	0	6	2.939184	1.354526
Oil	695	0	6	3.627158	1.062833

Appendix C: Endogeneity Test

Table C3.1 Endogeneity Test of Corruption

Political instability	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Corruption	0.996	0.447	2.23	0.027	0.114	1.878
Residual from model used corruption as dependent variable	-0.669	0.477	-1.4	0.162	-1.609	0.272
Gross tertiary enrolment	-0.052	0.013	-4.19	0	-0.077	-0.028
Youth bulge	0.087	0.048	1.82	0.07	-0.007	0.182
Population Growth Rate	0.260	0.134	1.94	0.054	-0.004	0.523
Urban growth	-0.096	0.078	-1.24	0.215	-0.249	0.056
Total public spending	2.069	1.033	2	0.047	0.031	4.107
GDP Annual Growth	-0.087	0.049	-1.78	0.077	-0.185	0.010
Level of democracy	0.267	0.058	4.61	0	0.153	0.381
Youth unemployment	0.801	0.390	2.06	0.041	0.033	1.569
Trade Openness	0.002	0.003	0.69	0.493	-0.004	0.008
Constant	-8.993	3.963	-2.27	0.024	-16.808	-1.179

Appendix D: The Empirical Results of the Robustness Test

Table D3.1 Empirical Results of Fixed Effect (period effect) over Period 1984-2013

Independent variables	Dependent variable: Political Instability			
	Model 1	Model 6	Model 11	Model 16
YB	.147*** (.024)	.147*** (.023)	.134*** (.023)	.079*** (.025)
TYU	.452*** (.149)	.553*** (.153)	.278* (.152)	.627*** (.146)
Rents	-.049*** (.013)	-.051*** (.013)	-.035*** (.013)	-.045*** (.013)
TO	-.003** (.001)	-.004*** (.001)	-.002* (.001)	-.003*** (.001)
GDP growth	-.313*** (.058)	-.300*** (.058)	-.313*** (.057)	-.292*** (.057)
RT	-.004 (.029)	.001 (.028)	.010 (.028)	.023 (.028)
Corruption	.682*** (.105)	1.017*** (.162)	.571*** (.106)	1.300*** (.140)
GTE	-.001 (.006)	.001 (.006)	-.005 (.006)	-.029*** (.007)
Log T.pop	.934*** (.163)	.959*** (.162)	.773*** (.164)	.629*** (.163)
UGR	.045 (.035)	.045 (.035)	.045 (.034)	.081** (.034)
Corruption*YB		.035*** (.013)		
Corruption*TYU			-.457*** (.098)	
Corruption*GTE				-.024*** (.003)
Constant	-2.505** (1.082)	3.200*** (1.0566)	1.536 (1.112)	1.660 (1.154)
Adjusted R square	39%	41%	41%	44%
Number of observation	617	617	617	617
Estimation method	2SLS- Fixed (Period Effect)			
P-value	0	0	0	0
Number of instrument	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesises. *, **, *** Indicate significance at the 10 percent, 5 percent and 1 percent level, respectively. YB is youth bulge, TYU is rate of total youth unemployment, Rents is rents from natural resources, TO is trade openness, GDP growth is GDP annual growth, RT is level of democracy, GTE is gross tertiary enrolment, Log T.pop is logarithm of total population and UGR is urban growth rate.

Table D3.2 Empirical Results of Alternative Proxy of Political Instability over Period 1984-2013

Independent variables	Dependent variable: Political Instability			
	Model 1	Model 6	Model 11	Model 16
YB	.063*** (.009)	.063*** (.009)	.059*** (.009)	.043*** (.010)
TYU	.140* (.073)	.1555** (.074)	.086 (.077)	.199*** (.071)
Rents	.004 (.005)	.003 (.005)	.008* (.004)	.004 (.004)
TO	-0.002*** (0.0004)	-.002*** (.004)	-.002*** (.0005)	-.002*** (.0004)
GDP growth	-.064*** (.022)	-.063*** (.022)	0.064*** (.021)	-.058*** (.021)
RT	.014 (.014)	.015 (.014)	.019 (.013)	.023* (.014)
Corruption	.211*** (.032)	0.254*** (0.077)	.186*** (.030)	.383*** (.046)
GTE	-.007*** (.002)	-.007*** (.002)	-.008*** (.002)	-.018*** (.003)
Log T.pop	.349*** (.058)	.355*** (.058)	.293*** (.060)	.265*** (.058)
UGR	-.022 (.018)	-.022 (.018)	-.022 (.017)	-.011 (.017)
Corruption*YB		.005 (.006)		
Corruption*TYU			-.136*** (.040)	
Corruption*GTE				-.008*** (.001)
Constant	-1.341*** (.493)	1.055** (.488)	-.086 (.454)	-.256 (.522)
Adjusted R square	41%	42%	43%	45%
Number of observation	626	626	626	626
Estimation method	2SLS			
P-value	0	0	0	0
Number of instrument	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesises. *, **, *** Indicate significance at the 10 percent, 5 percent and 1 percent level, respectively. YB is youth bulge, TYU is rate of total youth unemployment, Rents is rents from natural resources, TO is trade openness, GDP growth is GDP annual growth, RT is level of democracy, GTE is gross tertiary enrolment, Log T.pop is logarithm of total population and UGR is urban growth rate.

Table D3.3 Empirical Results of Alternative Proxy of Corruption over Period 1984-2013

Independent variables	Dependent variable: Political Instability			
	Model 1	Model 6	Model 11	Model 16
YB	.158*** (.029)	.158*** (.029)	.168*** (.032)	.129*** (.034)
TYU	.352 (.235)	.349 (.256)	.399 (.252)	.414* (.240)
Rents	.005 (.012)	.005 (.013)	.002 (.012)	.004 (.012)
TO	-.002* (.001)	-.002 (.001)	-.002** (.001)	-.002* (.001)
GDP growth	-.330*** (.100)	-.331*** (.111)	-.332*** (.099)	-.313*** (.101)
RT	.091** (.042)	.091** (.041)	.094** (.043)	.089** (.041)
Corruption TI	.211*** (.072)	.205 (.152)	.223*** (.072)	.364*** (.109)
GTE	.010 (.007)	.010 (.007)	.011* (.007)	.0008 (.009)
Log T.pop	1.011*** (.171)	1.010*** (.170)	1.051*** (.171)	.897*** (.183)
UGR	.155*** (.045)	.154*** (.044)	.160*** (.045)	.160*** (.044)
Corruption*YB		-.0005 (.013)		
Corruption*TYU			.109 (.088)	
Corruption*GTE				-.004* (.002)
Constant	-5.481*** (1.533)	.347 (1.590)	-3.855** (1.536)	-3.071* (1.809)
Adjusted R square	24%	24%	24%	26%
Number of observation	416	416	416	416
Estimation method	2SLS			
P-value	0	0	0	0
Number of instrument	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesises. *, **, *** Indicate significance at the 10 percent, 5 percent and 1 percent level, respectively. YB is youth bulge, TYU is rate of total youth unemployment, Rents is rents from natural resources, TO is trade openness, GDP growth is GDP annual growth, RT is level of democracy, GTE is gross tertiary enrolment, Log T.pop is logarithm of total population and UGR is urban growth rate.

Appendix E: Correlation Matrix

Variables	PI	YB	TYU	Rents	TO	GDP growth	Corruption	RT	GTE	Log T.pop	UGR
PI	1.000										
YB	0.465	1.000									
P-value	0.000										
TYU	0.170	0.052	1.000								
P-value	0.000	0.028									
Rents	0.049	0.230	0.005	1.000							
P-value	0.003	0.000	0.842								
TO	-0.020	-0.047	-0.086	0.001	1.000						
P-value	0.378	0.017	0.005	0.956							
GDP growth	-0.140	0.059	-0.143	0.132	-0.056	1.000					
P-value	0.000	0.000	0.000	0.000	0.004						
Corruption	0.339	0.516	0.223	0.335	-0.029	0.069	1.000				
P-value	0.000	0.000	0.000	0.000	0.201	0.000					
RT	-0.261	-0.457	0.023	-0.371	0.006	-0.065	-0.395	1.000			
P-value	0.000	0.000	0.319	0.000	0.741	0.000	0.000				
GTE	-0.365	-0.748	0.065	-0.243	0.006	-0.087	-0.324	0.513	1.000		
P-value	0.000	0.000	0.011	0.000	0.810	0.000	0.000	0.000			
Log T.pop	0.108	-0.039	-0.084	-0.004	0.101	-0.007	0.104	0.121	0.109	1.000	
P-value	0.000	0.007	0.000	0.797	0.000	0.640	0.000	0.000	0.000		
UGR	-0.033	0.043	0.023	0.046	-0.140	0.023	0.079	-0.041	0.033	-0.030	1.000
P-value	0.083	0.009	0.378	0.005	0.000	0.156	0.000	0.006	0.100	0.071	

PI political instability, YB is youth bulge, TYU is rate of total youth unemployment, Rents is rents from natural resources, TO is trade openness, GDP growth is GDP annual growth, RT is level of democracy, GTE is gross tertiary enrolment, Log T.pop is logarithm of total population and UGR is urban growth rate.

Appendix of the Fourth Chapter

Table A4.1 Unit Root Test of Total Expenditure to GDP

Fisher-type unit-root test for Total expenditure to GDP
Based on augmented Dickey-Fuller tests
Ho: All panels contain unit roots Number of panels = 154
Ha: At least one panel is stationary Avg. number of periods = 34.58
AR parameter: Panel-specific Asymptotics: T -> Infinity
Panel means: Included
Time trend: Not included
Drift term: Included ADF regressions: 0 lags
Statistic p-value
Inverse chi-squared(306) P 1232.0453 0.0000
Inverse normal Z -24.3033 0.0000
Inverse logit t(769) L* -26.9467 0.0000
Modified inv. chi-squared Pm 37.4332 0.0000
P statistic requires number of panels to be finite.
Other statistics are suitable for finite or infinite number of panels.

Table A4.2 Endogeneity Test of Total Expenditure to GDP

PI	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
GS	-0.826	0.369	-2.24	0.025	-1.550	-0.103
TYU	0.670	0.166	4.04	0	0.344	0.996
Rents	-0.043	0.015	-2.9	0.004	-0.072	-0.014
TO	-0.005	0.002	-2.87	0.004	-0.009	-0.002
RT	-0.097	0.031	-3.16	0.002	-0.157	-0.037
GTE	-0.045	0.007	-6.68	0	-0.058	-0.032
Log T.pop	1.166	0.194	6.02	0	0.785	1.546
UGR	0.091	0.038	2.39	0.017	0.016	0.165
Residuals from reduced form equation	0.803	1.751	0.46	0.647	-2.636	4.241
Constant	5.553	1.636	3.39	0.001	2.340	8.766

Table A4.3 Unit Root Test of Education Expenditure to GDP[434]

Fisher-type unit-root test for Difference of log of education expenditure to GDP
Based on augmented Dickey-Fuller tests
Ho: All panels contain unit roots Number of panels = 164
Ha: At least one panel is stationary Avg. number of periods = 14.98
AR parameter: Panel-specific Asymptotics: T -> Infinity
Panel means: Included
Time trend: Not included
Drift term: Not included ADF regressions: 0 lags
Statistic p-value
Inverse chi-squared(296) P 2315.2659 0.0000
Inverse normal Z -34.0997 0.0000
Inverse logit t(714) L* -52.1064 0.0000
Modified inv. chi-squared Pm 82.9913 0.0000
P statistic requires number of panels to be finite.
Other statistics are suitable for finite or infinite number of panels

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[434] Unit root test shows that the variable is not stationary at level and after transformation into log. Therefore it takes the log difference to transfer it into a stationary variable, the reported is the log difference.

Table A4.4 Endogeneity Test of Education Expenditure to GDP

PI	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
GR	49.289	45.051	1.09	0.275	-39.348	137.926
TYU	0.954	0.207	4.62	0	0.547	1.360
Rents	-0.059	0.026	-2.31	0.021	-0.109	-0.009
TO	0.006	0.004	1.63	0.104	-0.001	0.014
RT	-0.130	0.047	-2.75	0.006	-0.223	-0.037
GTE	-0.005	0.017	-0.27	0.784	-0.038	0.029
Log T.pop	1.181	0.235	5.03	0	0.719	1.643
UGR	0.211	0.076	2.76	0.006	0.061	0.361
Residual from reduced form equation	-50.842	44.960	-1.13	0.259	-139.299	37.615
Constant	-0.231	2.395	-0.1	0.923	-4.943	4.482

Table A4.5 Descriptive Statistics of Government Size Across the World

Region	N	Min	Mix	Mean	St.dev
Caribbean	198	3.219	39.881	14.950	8.409
Central America	279	4.997	43.479	12.638	5.173
Central Asia	115	5.915	30.000	15.519	5.710
Eastern Africa	448	2.047	69.543	16.771	7.496
East Asia	157	7.474	29.796	14.977	3.879
Eastern Europe	247	5.690	27.399	16.997	4.175
Micronesia, Melanesia and Polynesia	96	11.469	36.047	19.863	5.046
Middle Africa	508	2.651	84.508	17.282	8.649
Middle East and North Africa	556	5.746	76.222	18.586	6.502
North America	81	14.255	24.096	18.719	2.739
Northern Africa	73	4.835	17.071	9.791	2.877
Northern Europe	318	10.284	29.553	21.409	3.705
OCEANIA	82	14.590	20.526	18.334	0.939
South America	443	2.976	31.475	13.132	4.477
South-Eastern Asia	247	3.460	17.734	10.351	2.774
Southern Africa	118	6.308	25.469	13.629	4.225
Southern Asia	247	3.164	24.717	10.827	4.497
Southern Europe	271	8.536	29.434	17.157	3.790
Western Africa	426	4.833	64.392	15.117	7.819
Western Asia	194	5.861	43.406	17.009	8.132
Western Europe	222	9.154	26.481	19.842	4.648
Total	5326	2.047	84.508	16.025	6.681

Table A4.6 Descriptive Statistics of Government Size and Government Role under Different Sub-samples

Classification	Variable	N	Min	Max	Mean	St.dev
Non-oil countries	Government size	3341	0.716	4.242	2.681	0.408
	Government role	1917	-0.248	3.792	1.408	0.440
Oil Countries	Government size	663	1.576	4.334	2.716	0.396
	Government role	285	-0.351	2.653	1.397	0.428
Autocratic countries	Government size	2592	0.716	4.334	2.616	0.437
	Government role	1191	-0.351	3.792	1.309	0.490
Democratic countries	Government size	1595	1.090	3.644	2.805	0.334
	Government role	1185	0.045	2.958	1.533	0.348
Countries where the percentage of youth bulge <=30%	Government role	1738	1.090	4.334	2.790	0.343
	Government size	1270	0.045	2.958	1.489	0.361
Countries where the percentage of youth bulge >30%	Government role	1973	0.716	4.242	2.589	0.451
	Government size	876	-0.351	3.792	1.303	0.519

Appendix B: The Empirical Results of the Robustness Test

Table B4.1 Empirical Results of Alternative Proxy of Government Size over Period 1984-2013

Independent variables	Political Instability				
	Model 7	Model 13	Model 19	Model 25	Model 31
TYU	0.746*** (0.197)				
TO				-0.005*** (0.001)	
Government Size	-1.209** (0.489)	-0.277 (0.620)	-1.841** (0.732)	-1.517*** (0.522)	-1.562*** (0.510)
Corruption		0.735*** (0.108)			
GTE			-0.046*** (0.007)		
UGR					0.061 (0.040)
TYU*Government size	1.443** (0.660)				
Corr*Government size		-0.893*** (0.220)			
GTE*Government size			0.009 (0.030)		
TO*Government size				-0.002 (0.008)	
UGR*Government size					0.368*** (0.133)
Constant	3.940*** (1.326)	2.267** (0.988)	8.543*** (1.093)	1.858 (1.471)	0.368*** (0.133)
Adjusted R square	26%	30%	30%	24%	26%
Number of observation	616	625	1076	616	616
Estimation method	2SLS	2SLS	2SLS	2SLS	2SLS
Countries					
P-value	0	0	0	0	0
Number of instrument	1	1	1	1	1
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10%, 5% and 1% level, respectively. TYU is rate of total youth unemployment, Rents is rents from natural resources, TO is trade openness, GDP growth is GDP annual growth, RT is level of democracy, GTE is gross tertiary enrolment, Log T.pop is logarithm of total population and UGR is urban growth rate.

Table B4.2 Empirical Results of Alternative Proxy of Political Instability over Period 1984-2013

Independent variables	Political Instability						
	Model 7	Model 13	Model 19	Model 25	Model 31	Model 37	Model 41
TYU	0.279*** (0.071)					0.271*** (0.082)	
TO				-0.003*** (0.0005)			
GDP growth							
Government Size	-0.589*** (0.164)	-0.021 (0.218)	-1.084*** (0.179)	-0.650*** (0.182)	-0.637*** (0.171)		
Education Expenditure						-0.415 (0.754)	-0.438 (0.725)
Corruption		0.309 (0.046)					
GTE			-0.025*** (0.002)				
UGR					0.0005 (0.015)		0.043* (0.022)
TYU*Government size	0.501*** (0.195)						
Corr*Government size		-0.125 (0.082)					
GTE*Government size			0.044*** (0.007)				
TO*Government size				-0.001 (0.002)			
UGR*Government size					0.203*** (0.053)		
Education Expenditure*TYU						0.167 (0.945)	
Education Expenditure*UGR							-0.283 (0.254)
Constant	2.407*** (0.471)	1.738*** (0.406)	0.740 (0.550)	1.378** (0.552)	1.682*** (0.559)	1.180** (0.580)	0.602 (0.655)
Adjusted R square	34%	37%	38%	33%	36%	28%	29%
Number of observation	589	598	589	589	589	380	380
Estimation method	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS
P-value	0	0	0	0	0	0	0
Number of instrument	1	1	1	1	1	1	
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0	0	

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10%, 5% and 1% level, respectively. TYU is rate of total youth unemployment, Rents is rents from natural resources, TO is trade openness, GDP growth is GDP annual growth, RT is level of democracy, GTE is gross tertiary enrolment, Log T.pop is logarithm of total population and UGR is urban growth rate.

Table B4.3 Empirical Results of Fixed Effect (Year) over Period 1984-2013

Independent variables	Political Instability						
	Model 7	Model 13	Model 19	Model 25	Model 31	Model 37	Model 41
TYU	0.755*** (0.161)					0.959*** (0.176)	
TO				-0.008*** (0.001)			
Government Size	-1.198*** (0.441)	-0.043 (0.445)	-2.589*** (0.430)	-1.489*** (0.456)	-1.624*** (0.420)		
Education expenditure						-2.766 (1.715)	-2.984* (1.672)
Corruption		1.008*** (0.110)					
GTE			-0.053*** (0.007)				
UGR					0.083** (0.039)		0.122*** (0.041)
TYU*Government size	1.756*** (0.427)						
Corr*Government size		1.008*** (0.110)					
GTE*Government size			-0.053*** (0.007)				
TO*Government size				-0.008 (0.006)			
UGR*Government size					0.444*** (0.096)		
Education expenditure*TYU						-0.693 (2.391)	
Education expenditure*UGR							-1.098* (0.582)
Constant	7.122*** (1.255)	3.787*** (1.054)	3.402*** (1.280)	4.474*** (1.277)	5.637*** (1.256)	5.253*** (1.378)	3.201** (1.386)
Adjusted R square	27%	26%	29%		27%	25%	25%
Number of observation	580	589	580		580	378	378
Estimation method	2SLS-Fixed Effect (Year)						
P-value	0	0	0	0	0	0	0
Number of instrument	1	1	1	1	1	1	
P-value (the validity test of one year lag of GDP growth as instrument of GDP growth)	0	0	0	0	0	0	

White Heteroskedasticity corrected standard errors are in parenthesizes. *, **, *** Indicate significance at the 10%, 5% and 1% level, respectively. TYU is rate of total youth unemployment, Rents is rents from natural resources, TO is trade openness, GDP growth is GDP annual growth, RT is level of democracy, GTE is gross tertiary enrolment, Log T.pop is logarithm of total population and UGR is urban growth rate.

Appendix C: Correlation Matrix

Variables	PI	Government size	Education Expenditure	TYU	Rents	TO	GDP growth	RT	GTE	Log T.pop	UGR
PI	1.000										
Government size	-0.183	1.000									
P-value	0.000										
Education expenditure	-0.016	-0.001	1.000								
P-value	0.534	0.968									
TYU	0.170	0.177	-0.039	1.000							
P-value	0.000	0.000	0.207								
Rents	0.049	-0.097	-0.069	0.005	1.000						
P-value	0.003	0.000	0.003	0.842							
TO	-0.020	-0.047	-0.003	-0.086	0.001	1.000					
P-value	0.378	0.027	0.912	0.005	0.956						
GDP growth	-0.140	-0.126	-0.103	-0.143	0.132	-0.056	1.000				
P-value	0.000	0.000	0.000	0.000	0.000	0.004					
RT	-0.261	0.063	0.008	0.023	-0.371	0.006	-0.065	1.000			
P-value	0.000	0.000	0.747	0.319	0.000	0.741	0.000				
GTE	-0.365	0.287	-0.013	0.065	-0.243	0.006	-0.087	0.513	1.000		
P-value	0.000	0.000	0.616	0.011	0.000	0.810	0.000	0.000			
Log T.pop	0.108	-0.211	0.010	-0.084	-0.004	0.101	-0.007	0.121	0.109	1.000	
P-value	0.000	0.000	0.685	0.000	0.797	0.000	0.640	0.000	0.000		
UGR	-0.033	0.039	0.005	0.023	0.046	-0.140	0.023	-0.041	0.033	-0.030	1.000
P-value	0.083	0.028	0.843	0.378	0.005	0.000	0.156	0.006	0.100	0.071	

PI political instability, YB is youth bulge, TYU is rate of total youth unemployment, Rents is rents from natural resources, TO is trade openness, GDP growth is GDP annual growth, RT is level of democracy, GTE is gross tertiary enrolment, Log T.pop is logarithm of total population and UGR is urban growth rate.

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